



Rockwell International
Rocketdyne Division

7N-38
621631

RSS-8929-8

System for Anomaly and Failure Detection (SAFD)
System Development

Final Report
Volume IV of V

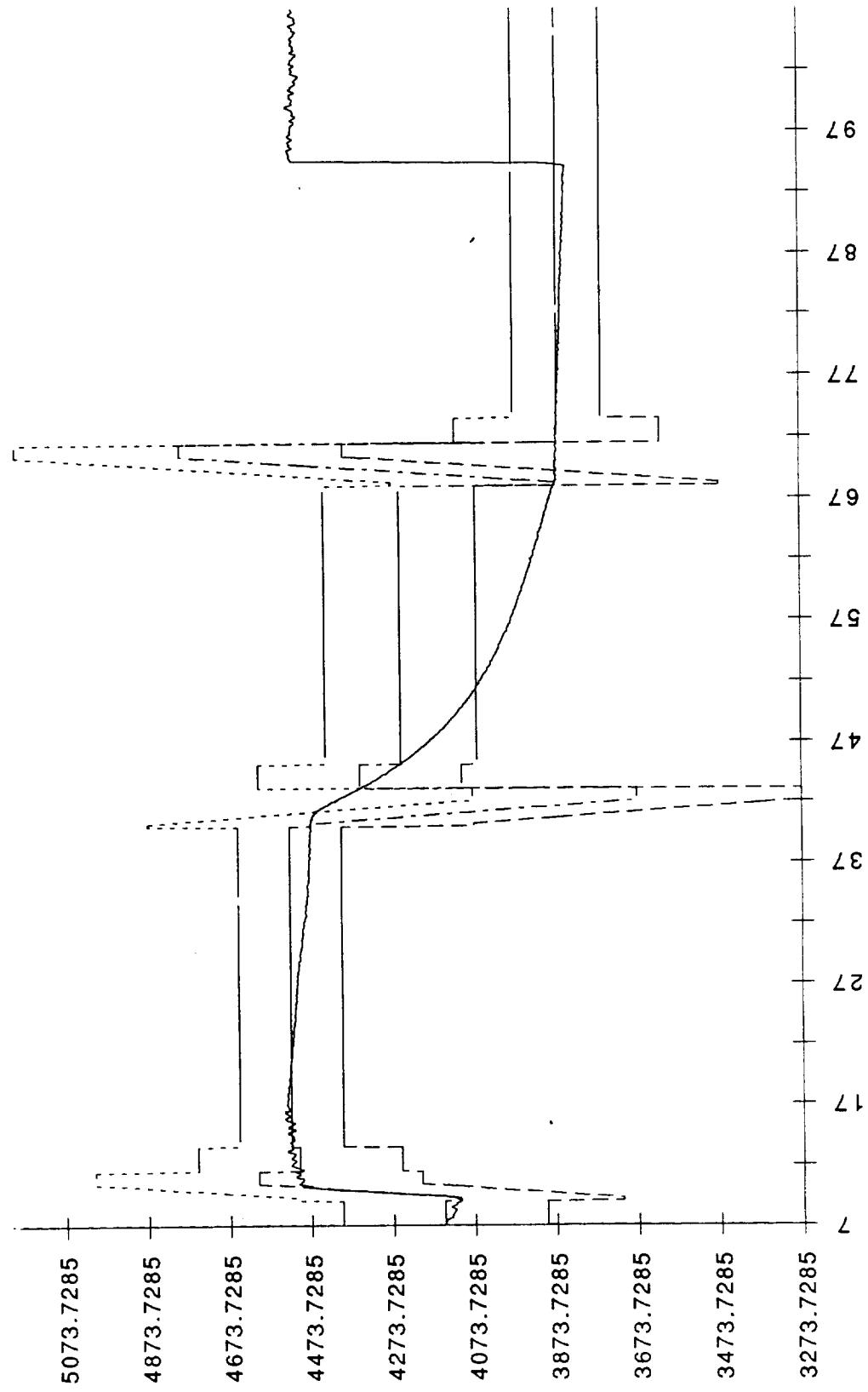
22 December 1995

Contract NAS8-40000

Task 233

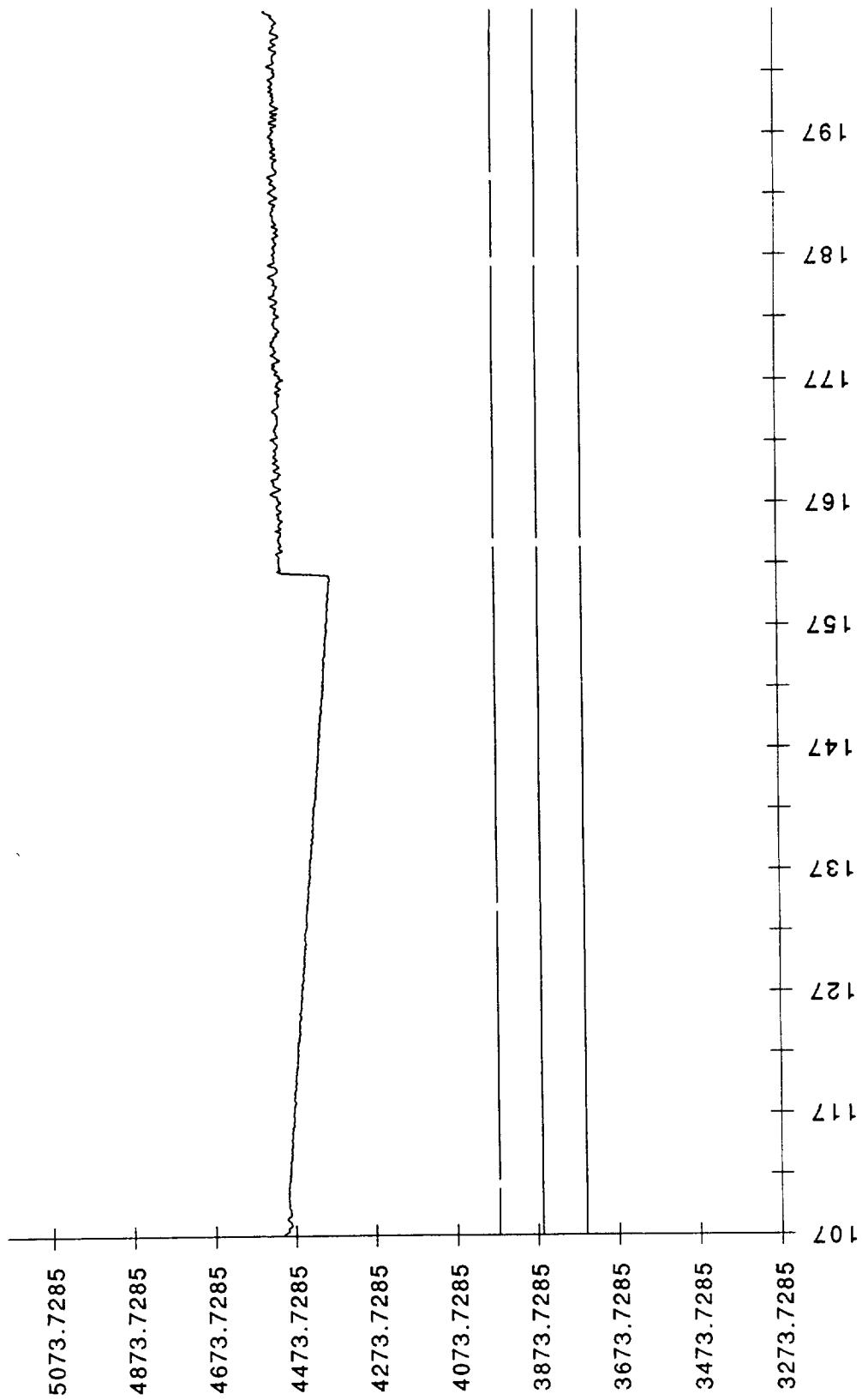
**Appendix C1
Good Test Plots
Rocketdyne Pumps w/ Nominal CCV Schedule**

750-168 HPFP bal cav pr.T



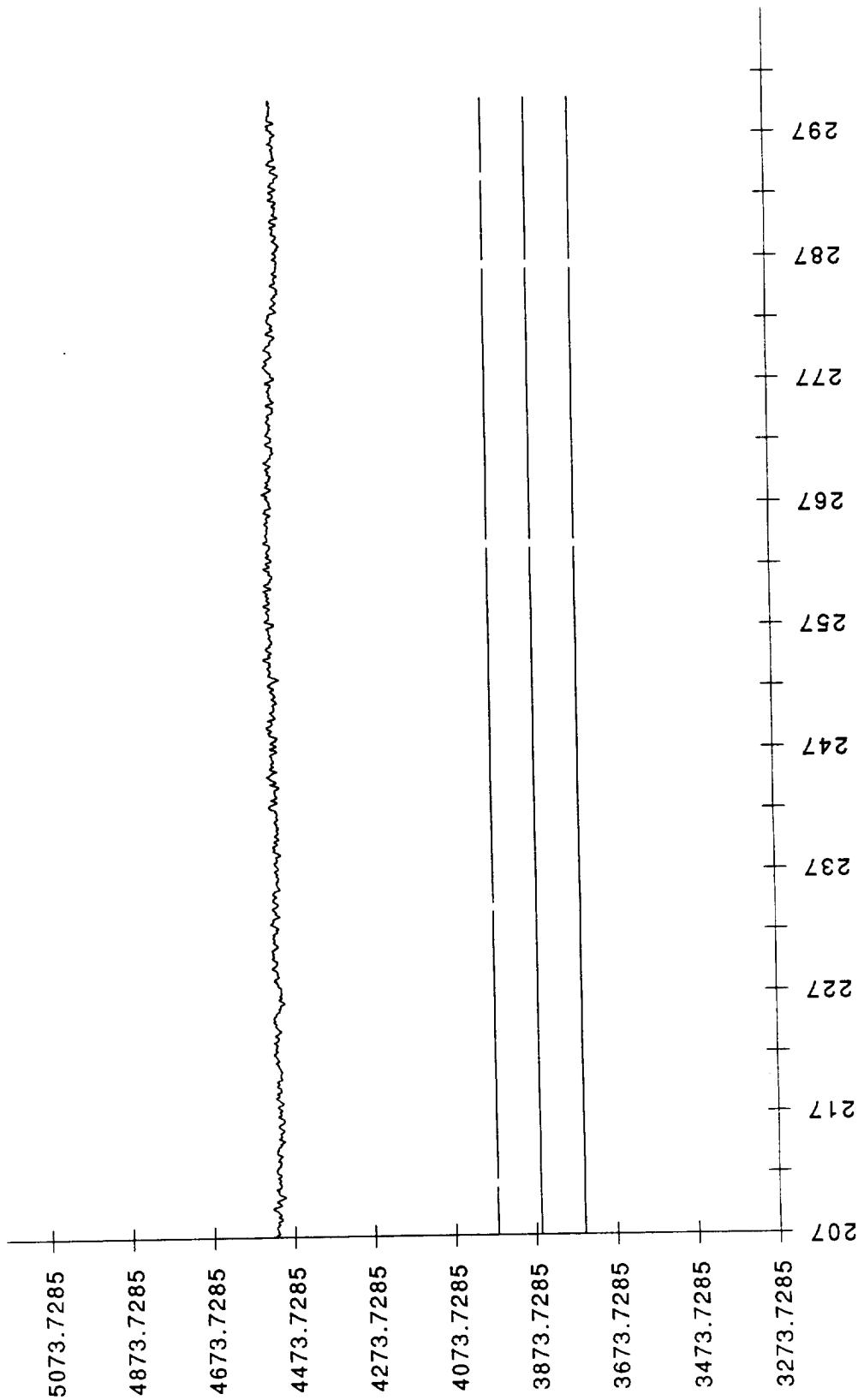
750-168 HPFP bal cav pr.T

750-168 HPFP bal cav pr.T



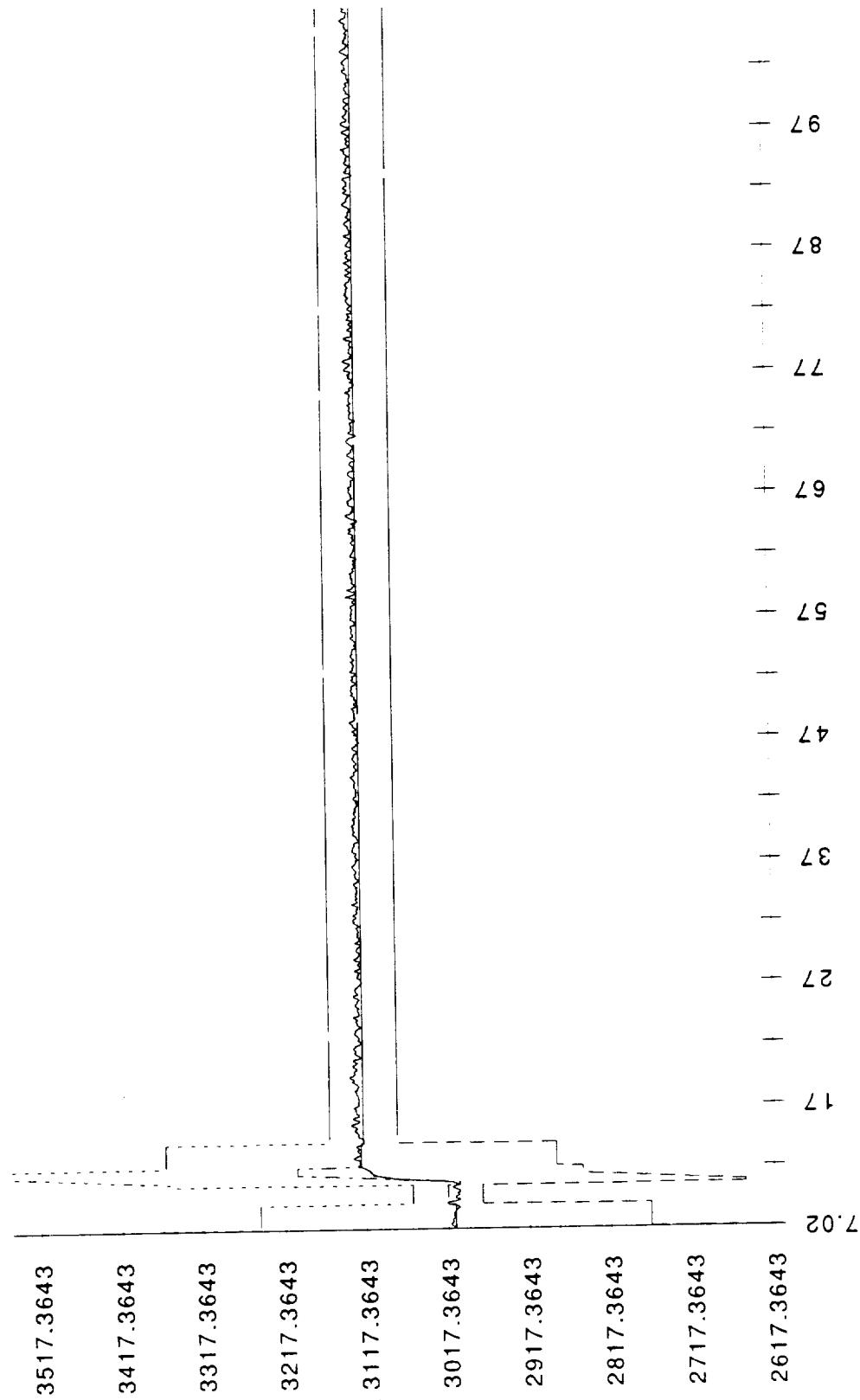
750-168 HPFP bal cav pr.T

750-168 HPFP bal cav pr.T

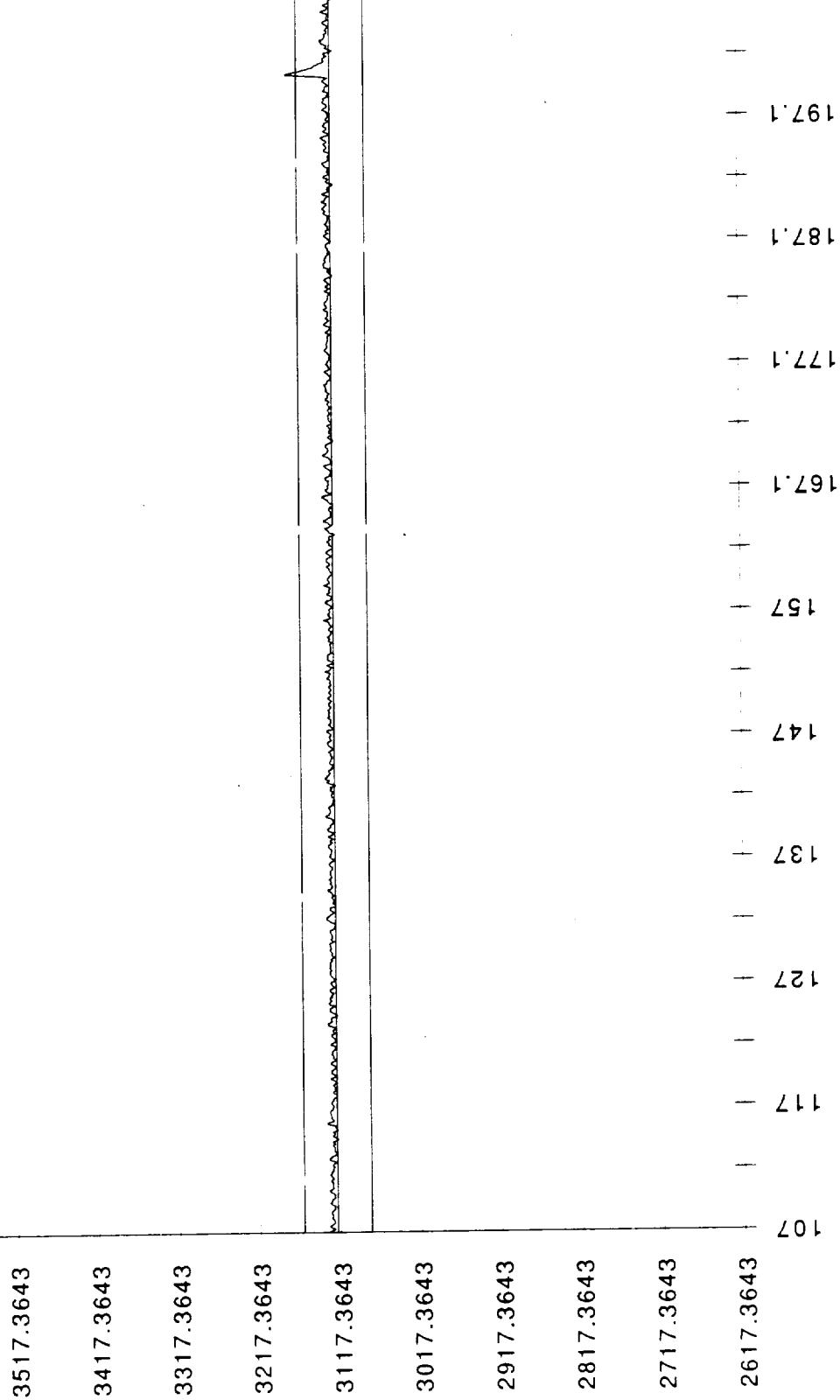


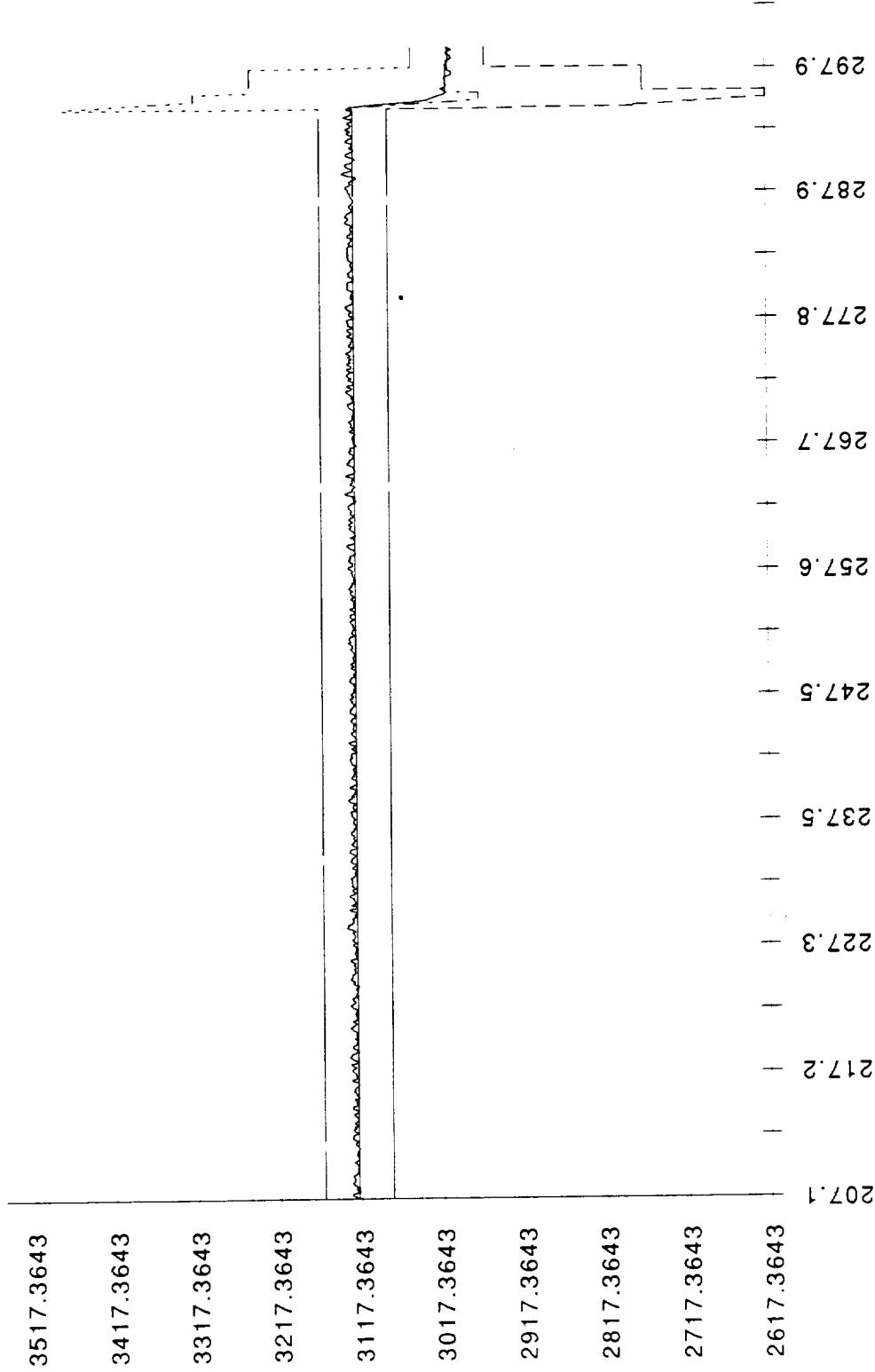
750-168 HPFP bal cav pr.T

750-291 MCC Pct



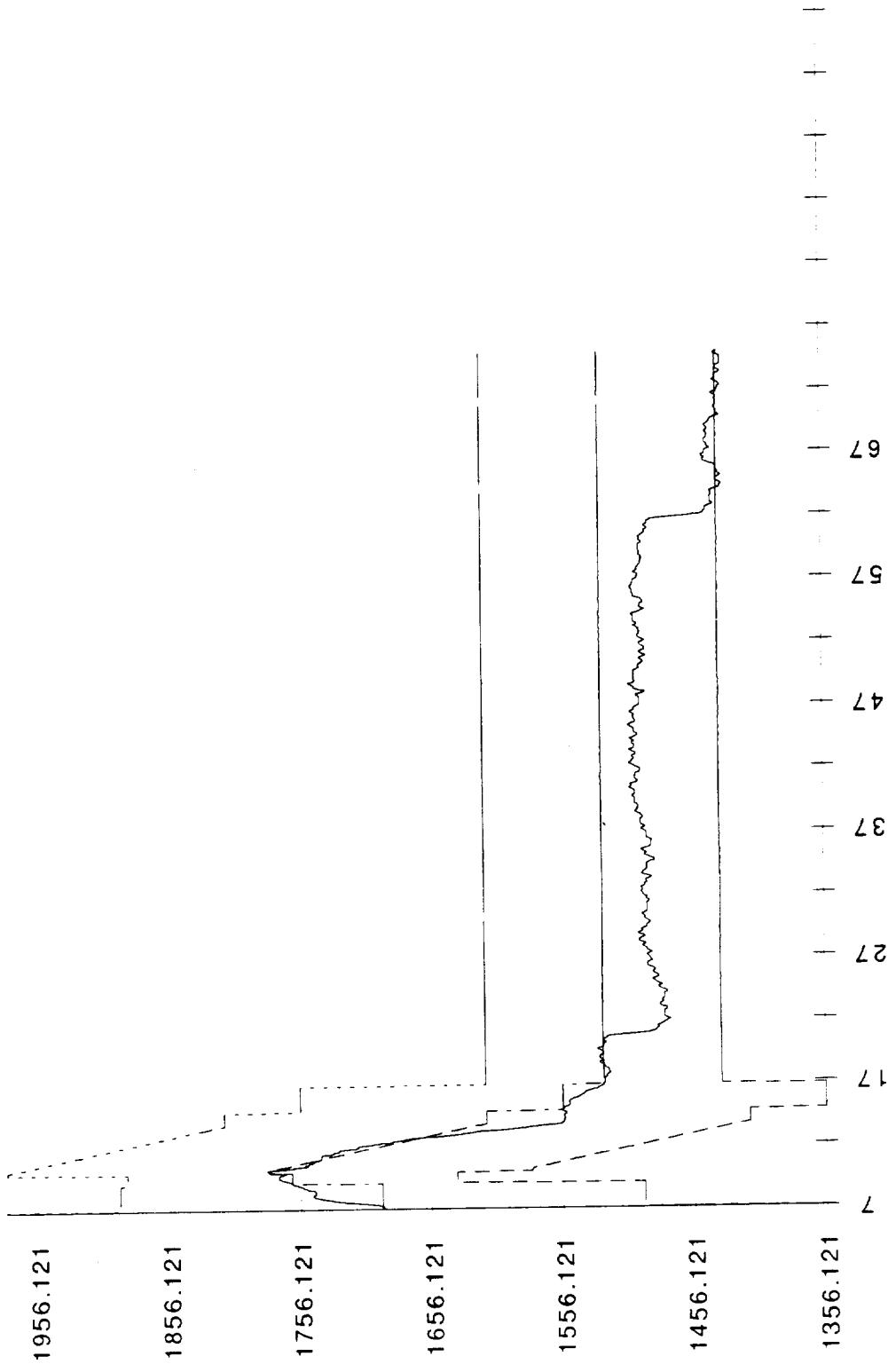
750-291 MCC Pct



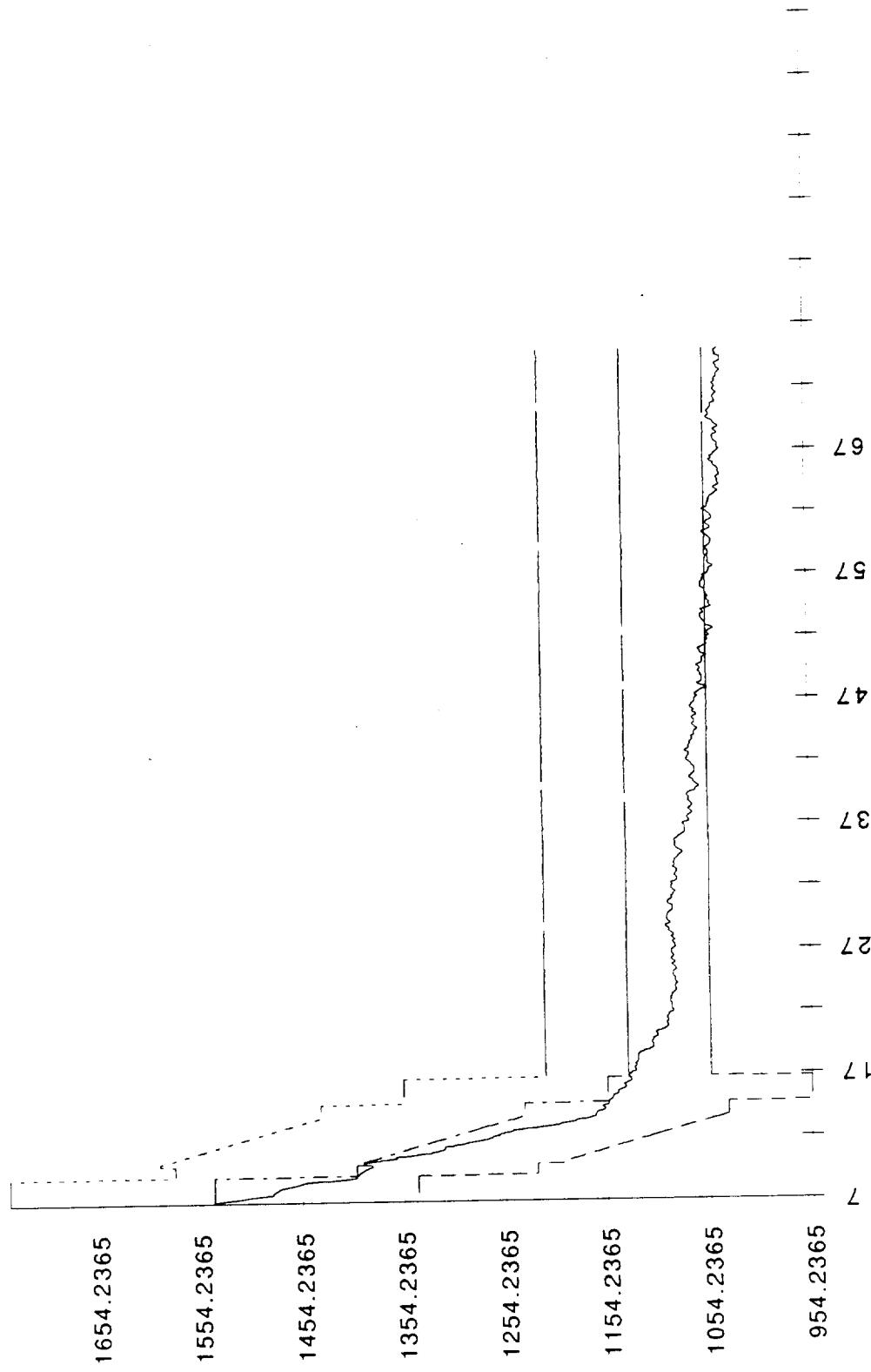


901-307 HFPP TDT A.T

901-307 HFPP TDT A.T

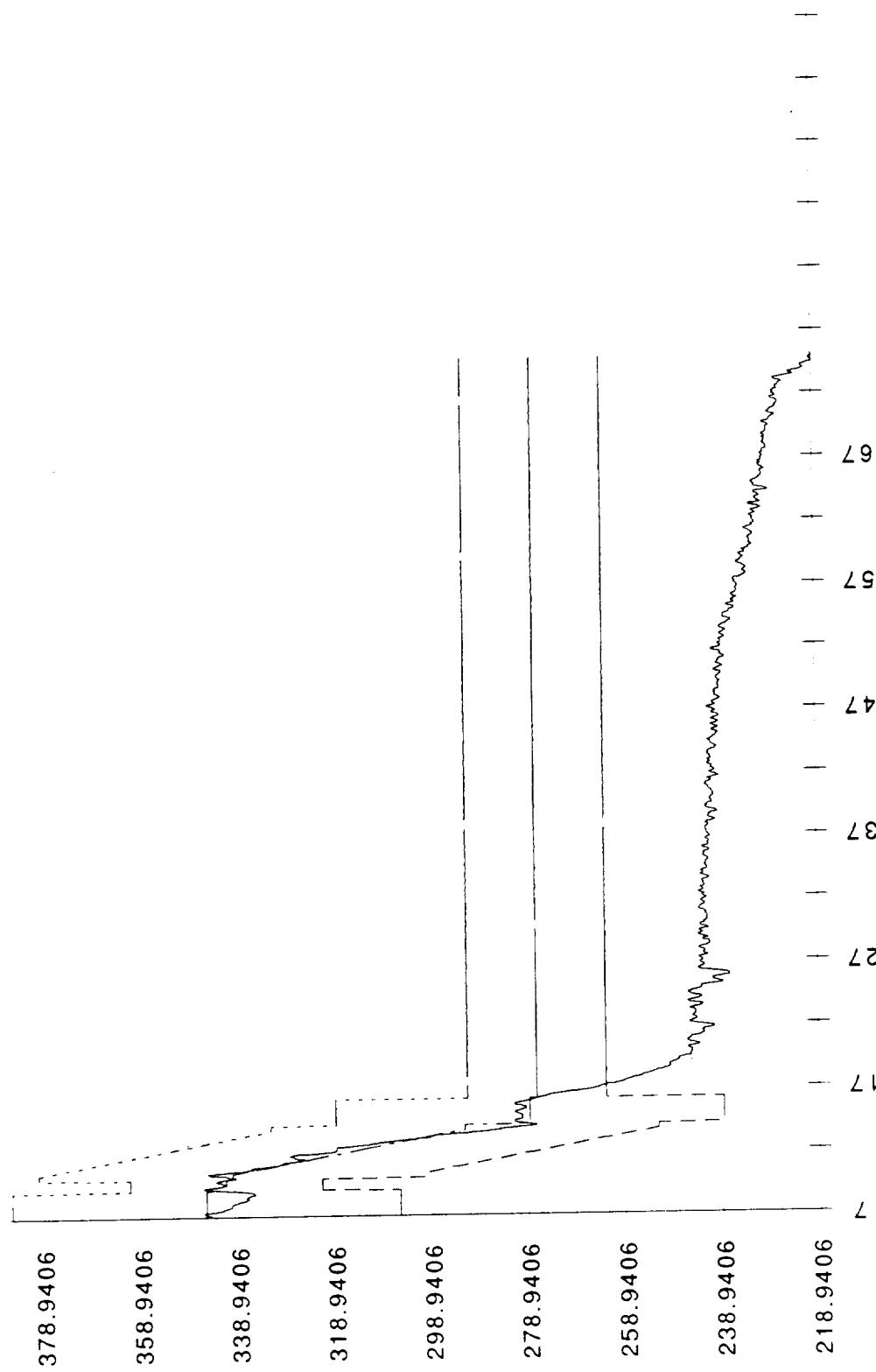


901-307 HPFP TDT B.T



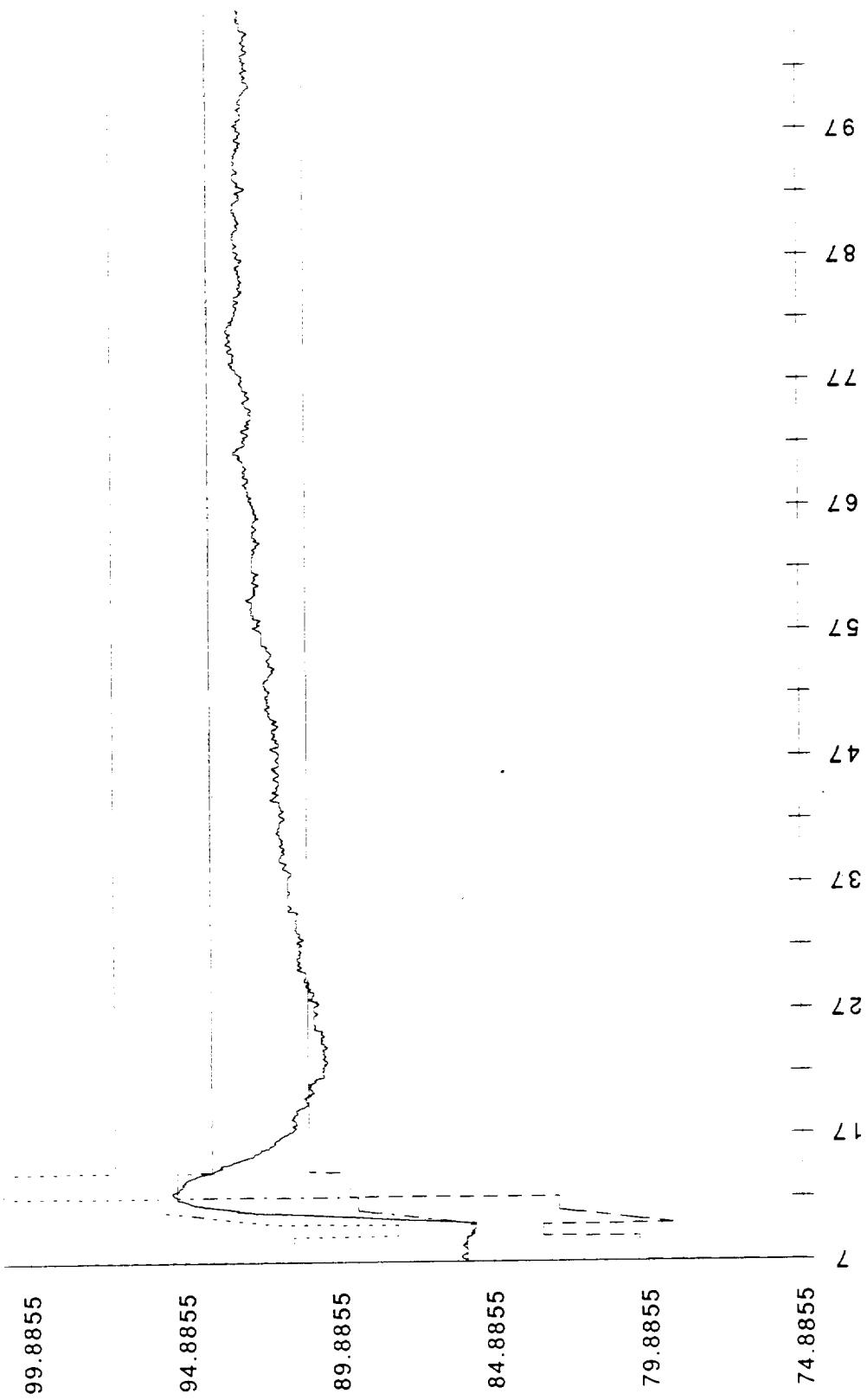
901-307 HR⁻² TDT B.T

901-307 LPOP dis pr.T



901-307 LP^D dis pr.T

901-346 FPOV pos.T



901-346 F~V pos.T

901-346 FPOV pos.T

99.8855

94.8855

89.8855

84.8855

79.8855

74.8855

107

117

127

137

147

157

167

177

187

197

901-346 FP&V pos.T

99.8855

94.8855

89.8855

84.8855

79.8855

74.8855

207

217

227

247

257

267

287

297

901-346 FPOV pos.T

99.8855

94.8855

89.8855

84.8855

79.8855

74.8855

307

327

317

337

357

347

367

377

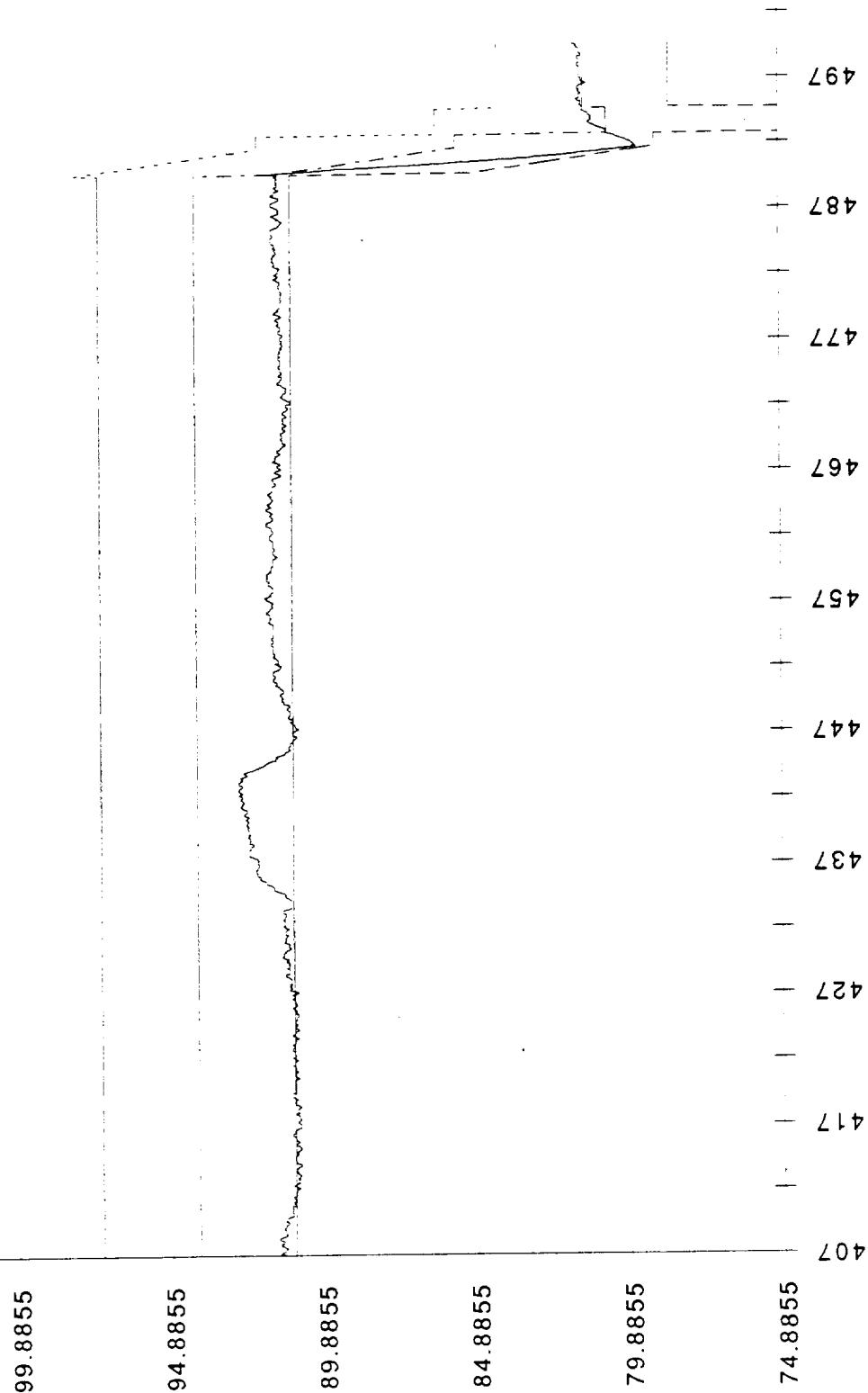
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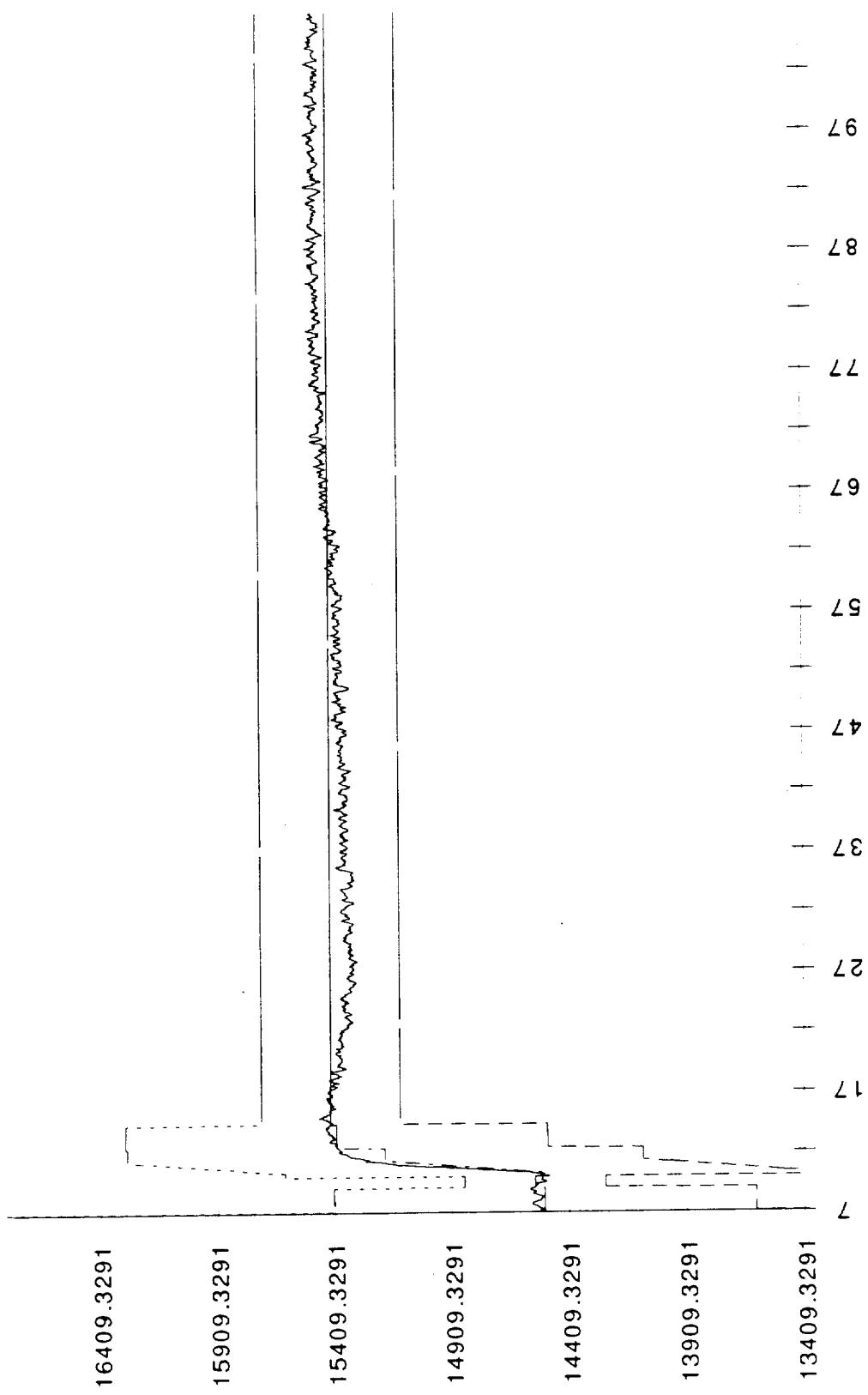
901-346 FPOV pos.T

901-346 FmCV pos.T

901-346 FPOV pos.T



901-346 LPFP sh sp.T



901-346 Lr- σ sh sp.T

901-346 LPFP sh sp.T

901-346 LP^rP sh sp.T

16409.3291

15909.3291

15409.3291

14909.3291

14409.3291

13909.3291

13409.3291

107

127

147

157

167

177

187

197

16409.3291

15909.3291

15409.3291

14909.3291

14409.3291

13909.3291

13409.3291

207

227

247

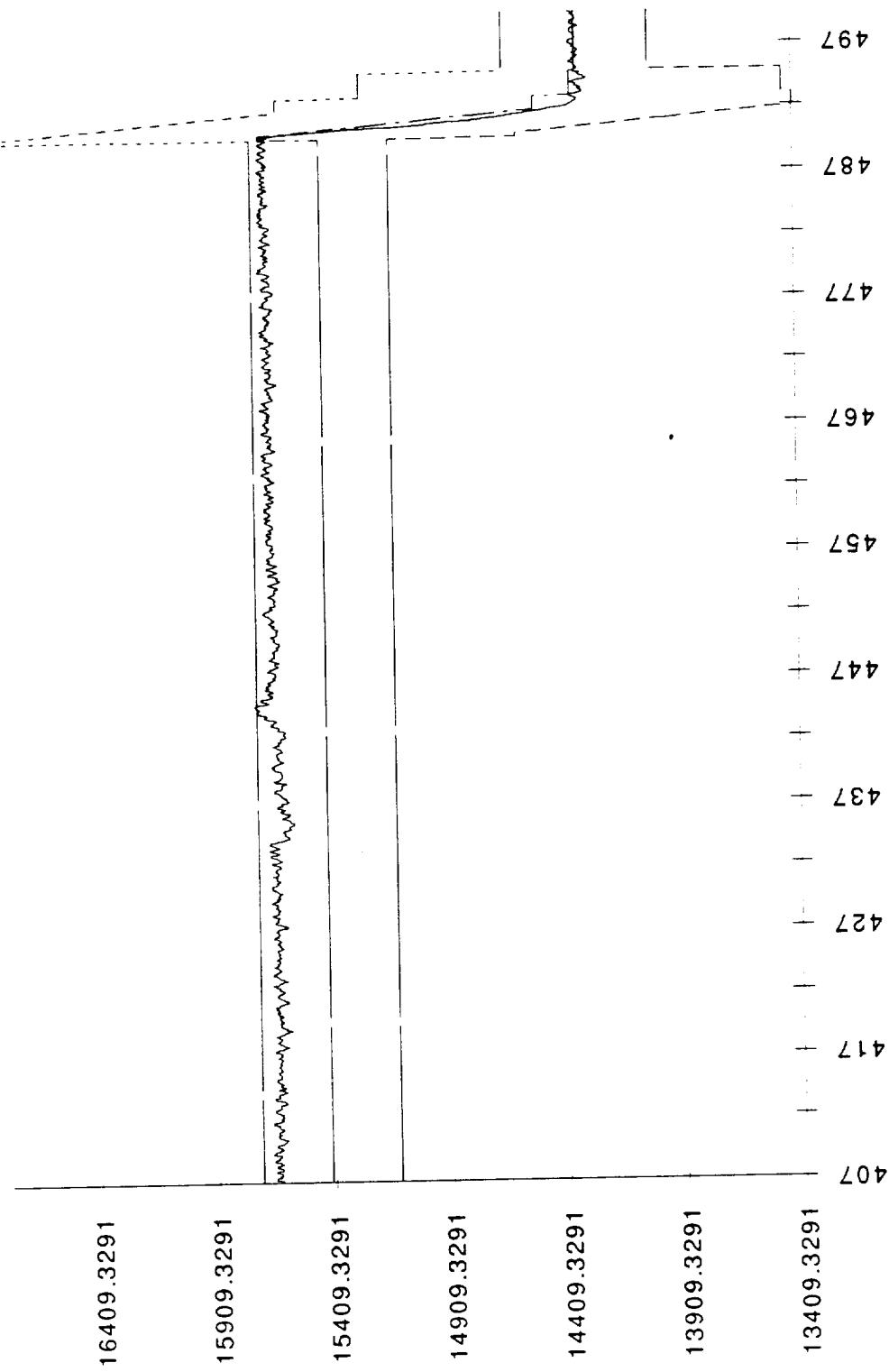
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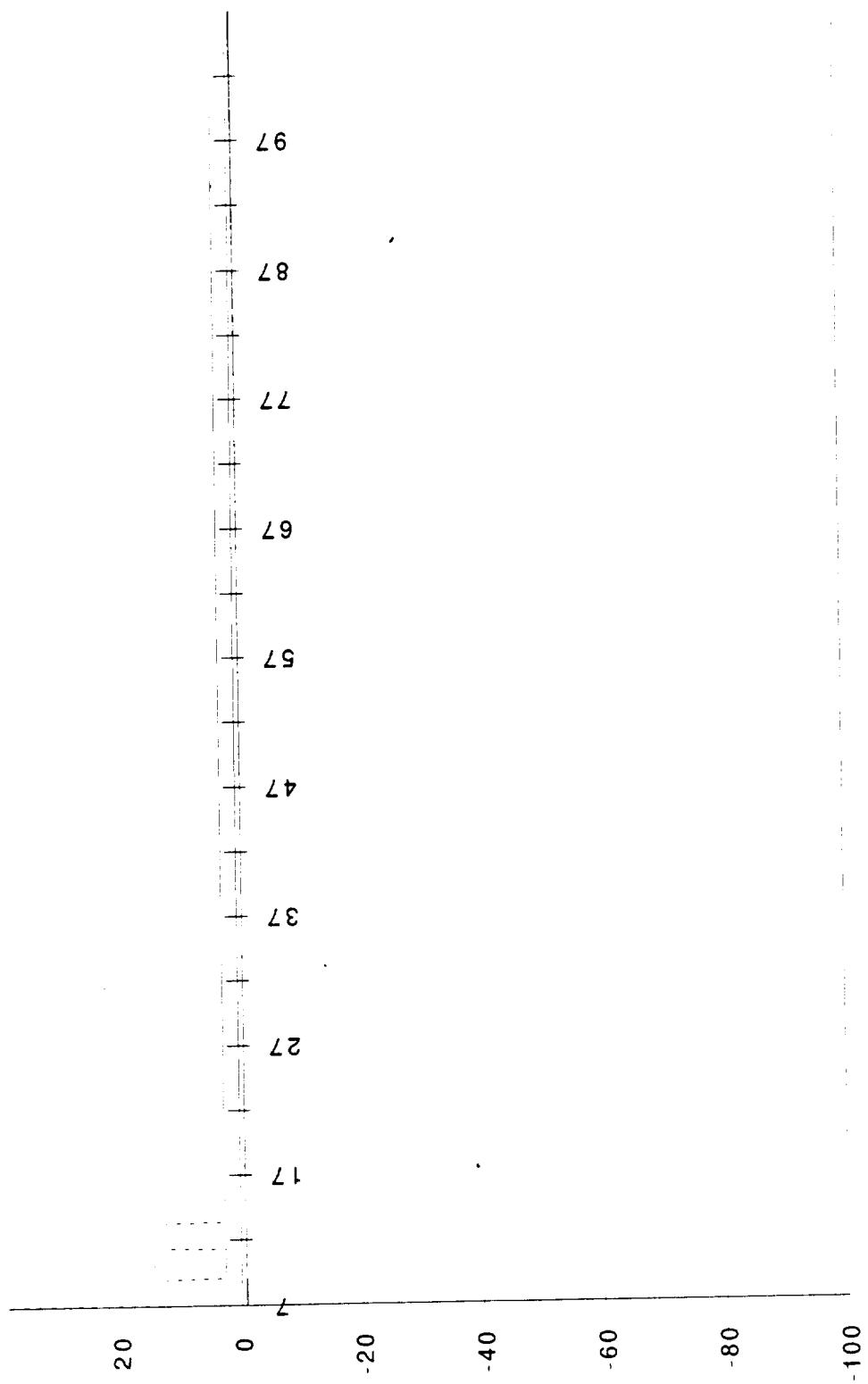
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901-346 LPFP sh sp.T



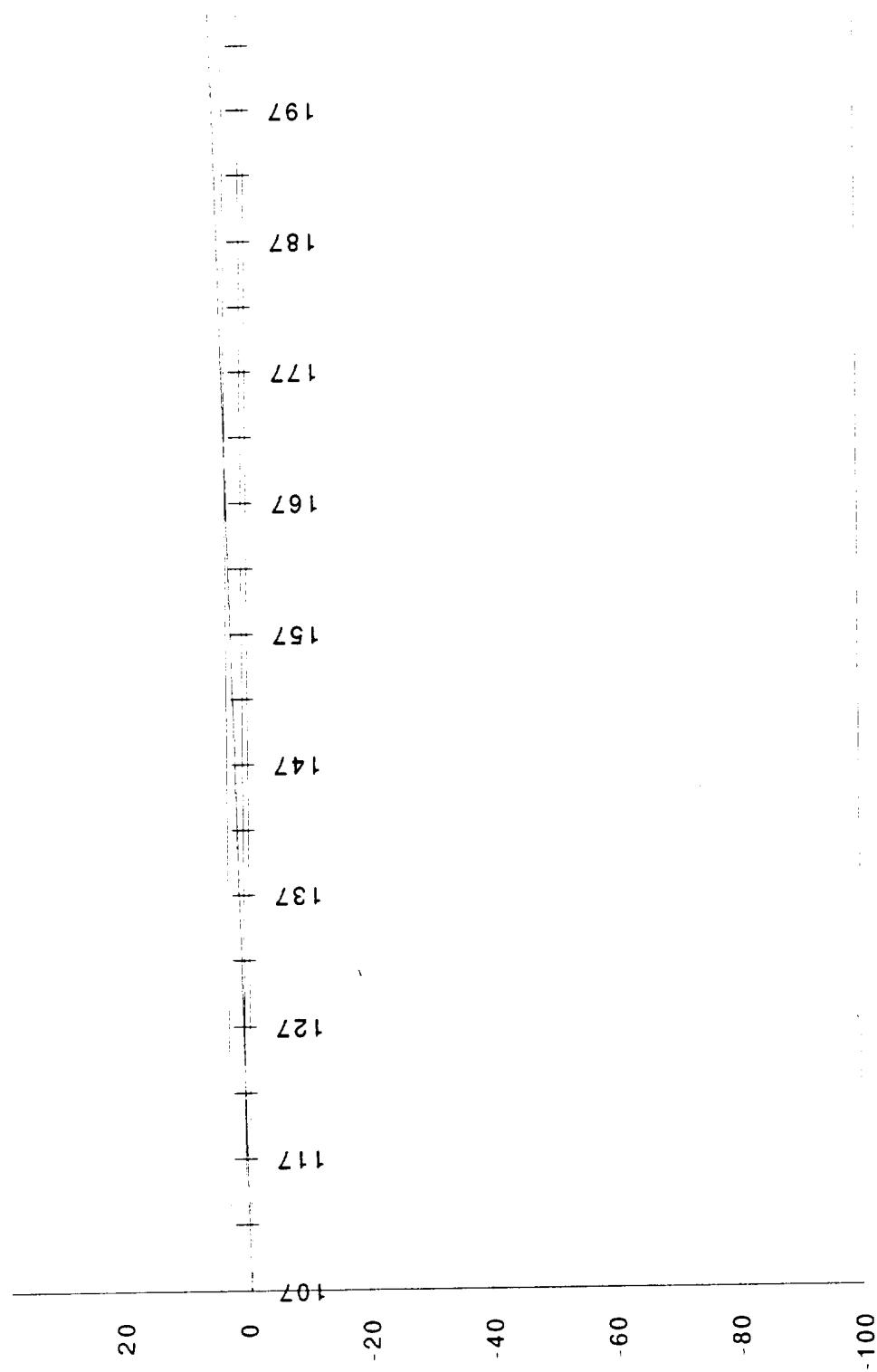
901-346 Lr-sh sp.T

901-346 MCC lin cav pr.T



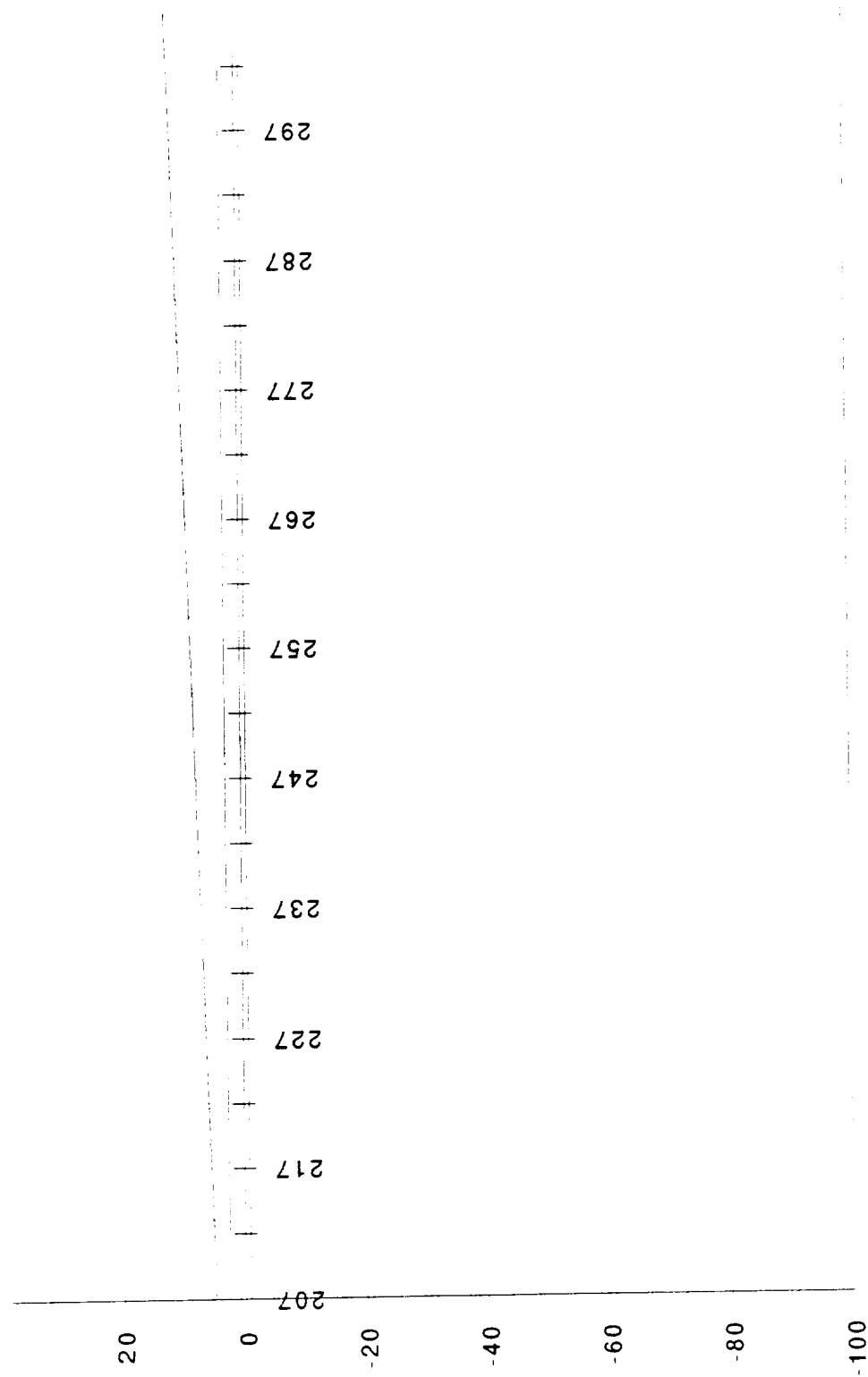
901-346 MCC lin cav pr.T

901-346 MCC in cav pr.T



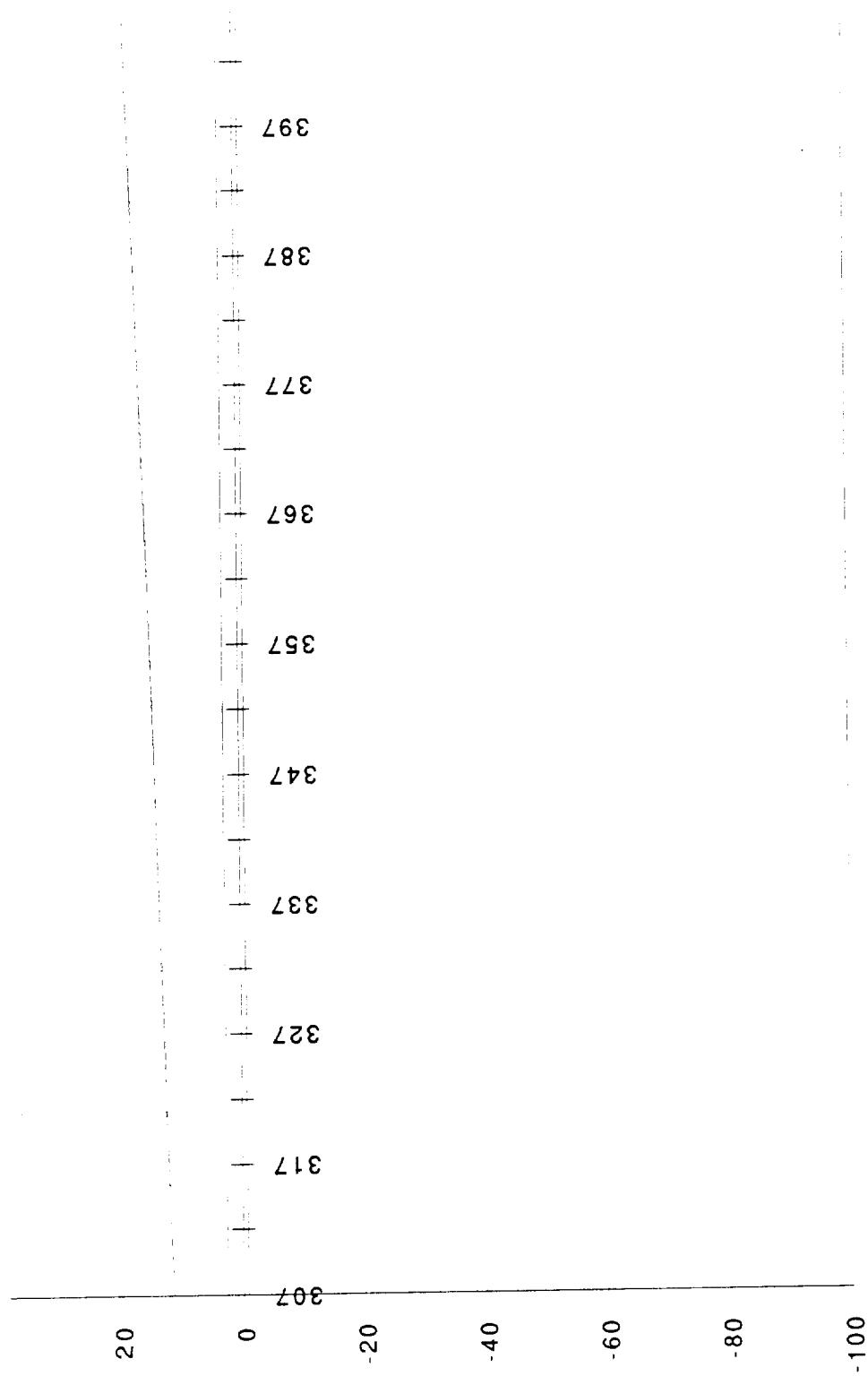
901-346 MC[~] in cav pr.T

901-346 MCC lin cav pr.T



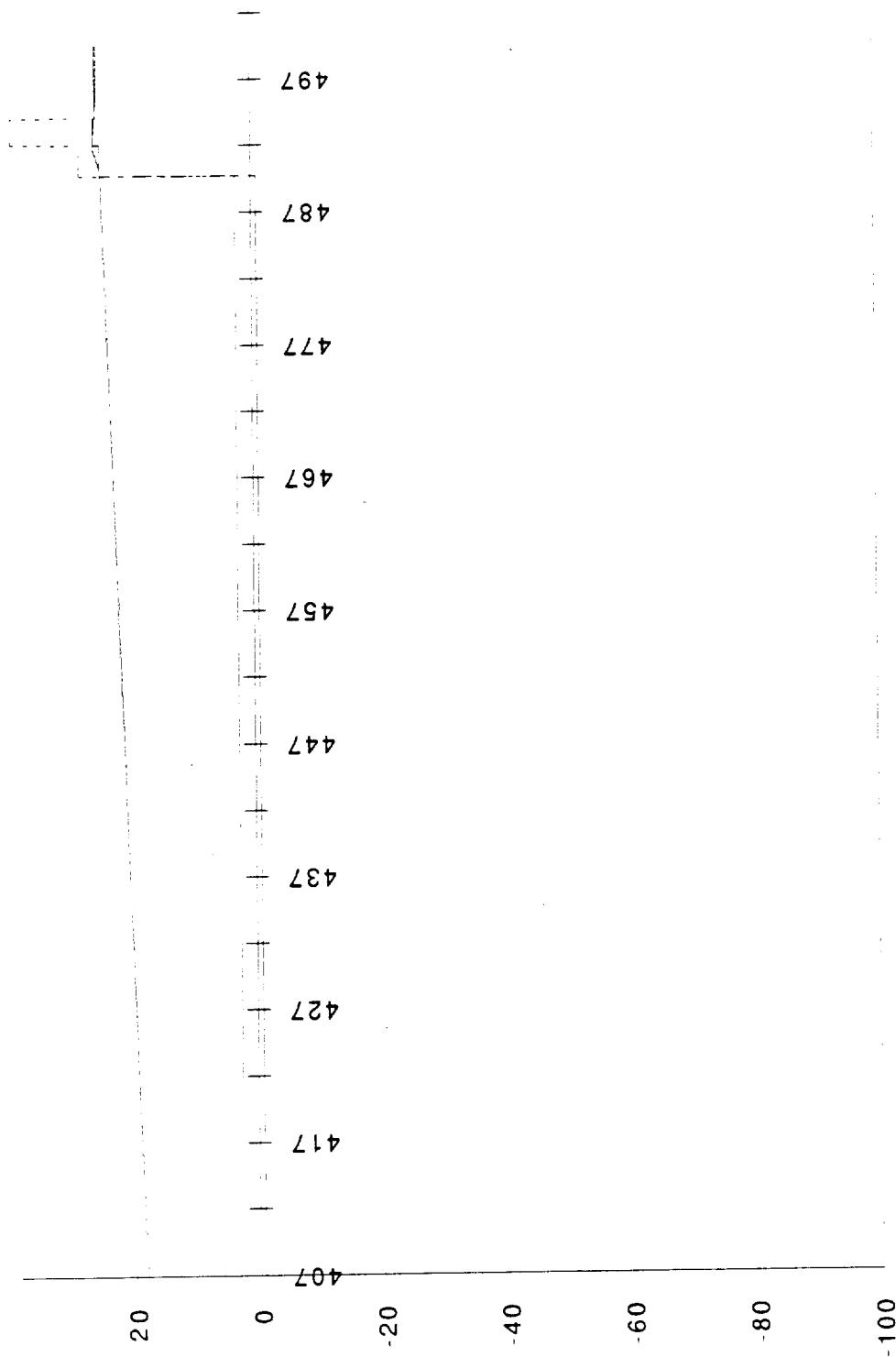
901-346 MCC 'in cav pr.T

901-346 MCC lin cav pr.T



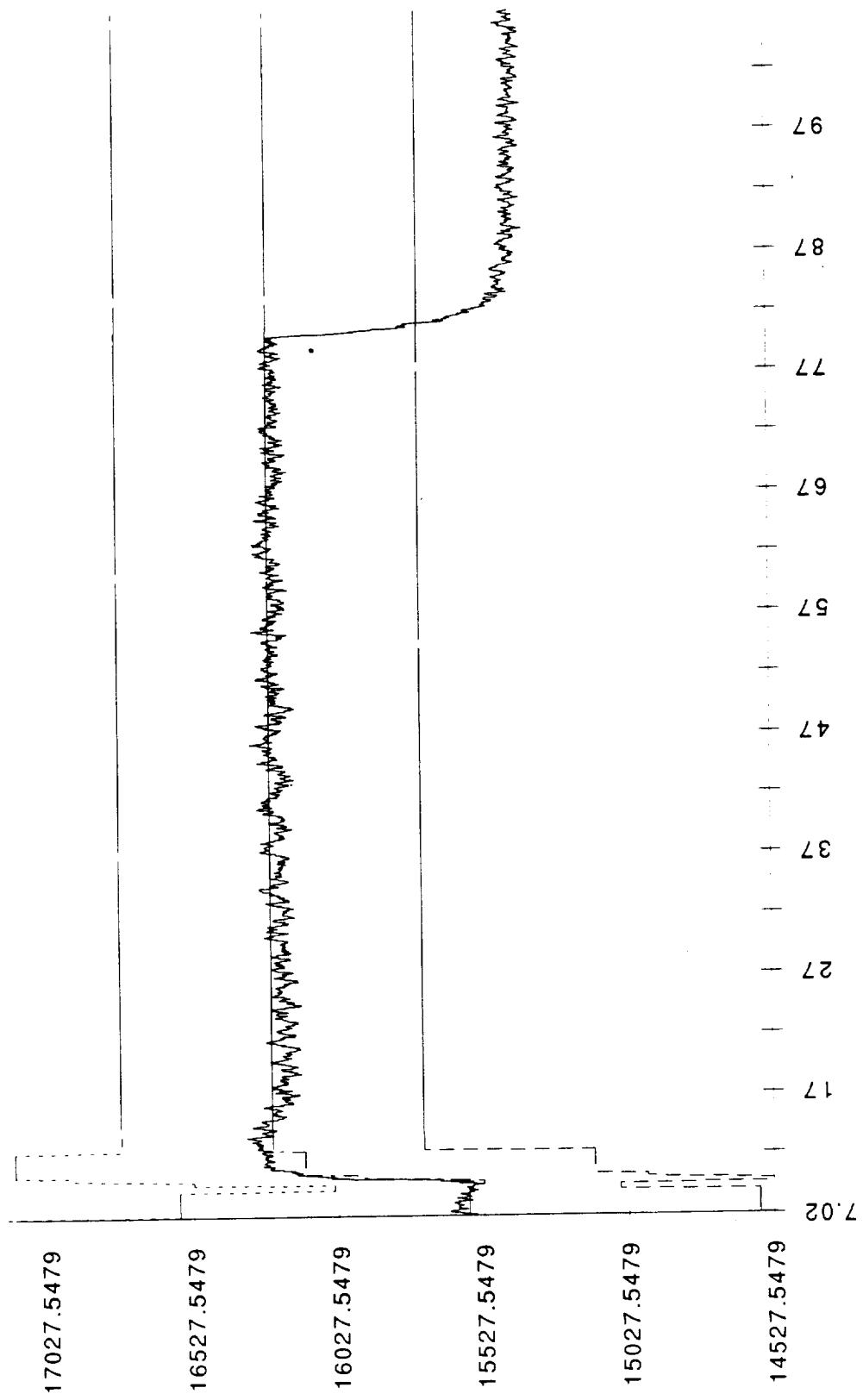
901-346 MCC~ lin cav pr.T

901-346 MCC lin cav pr.T



901-346 MCC lin cav pr.T

901-579 Fuel flow.T



901-579 Fuel flow.T

901-579 Fuel flow,T

17027.5479

16527.5479

16027.5479

15527.5479

15027.5479

14527.5479
107

147
137

127

117

107

157

147

137

127

117

107

167

177

187

197

901-579 Lg flow,T

901-579 Fuel flow.T

17027.5479

16527.5479

16027.5479

15527.5479

15027.5479

207
217
227
237
247
257
267
277
287
297

901-579 Fuel flow.T

901-579 Fuel flow.T

17027.5479

16527.5479

16027.5479

15527.5479

15027.5479

14527.5479

307

327
337

347
357

367
377

387

397

901-579 r..r flow.T

901-579 Fuel flow.T

17027.5479

16527.5479

16027.5479

15527.5479

15027.5479

14527.5479

407

427

447

457

467

487

497

901-579 Fuel flow.T

901-579 Fuel flow.T

901-579 Fuel flow.T

17027.5479

16527.5479

16027.5479

15527.5479

15027.5479

14527.5479

507

517

527

537

547

557

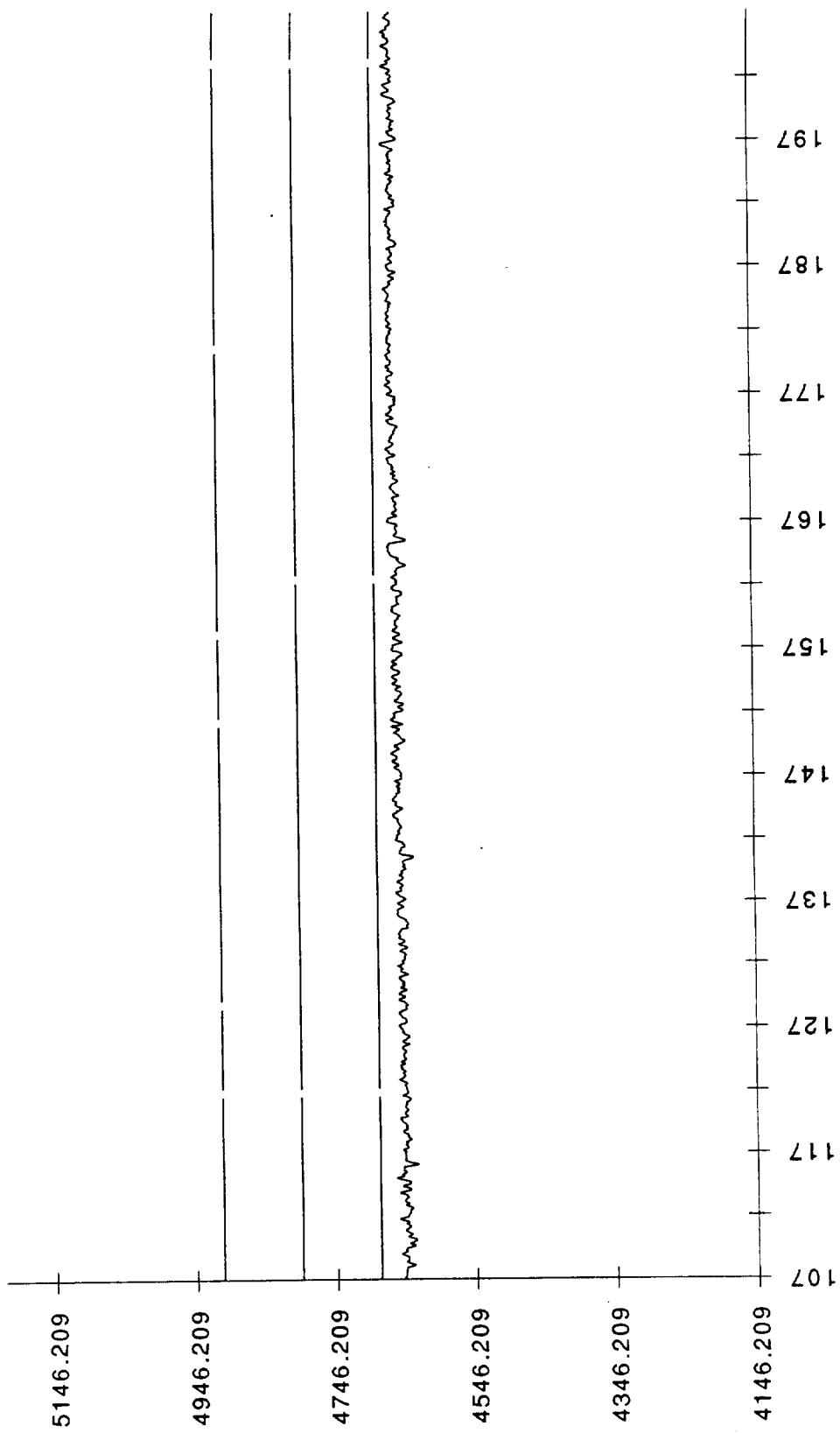
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577

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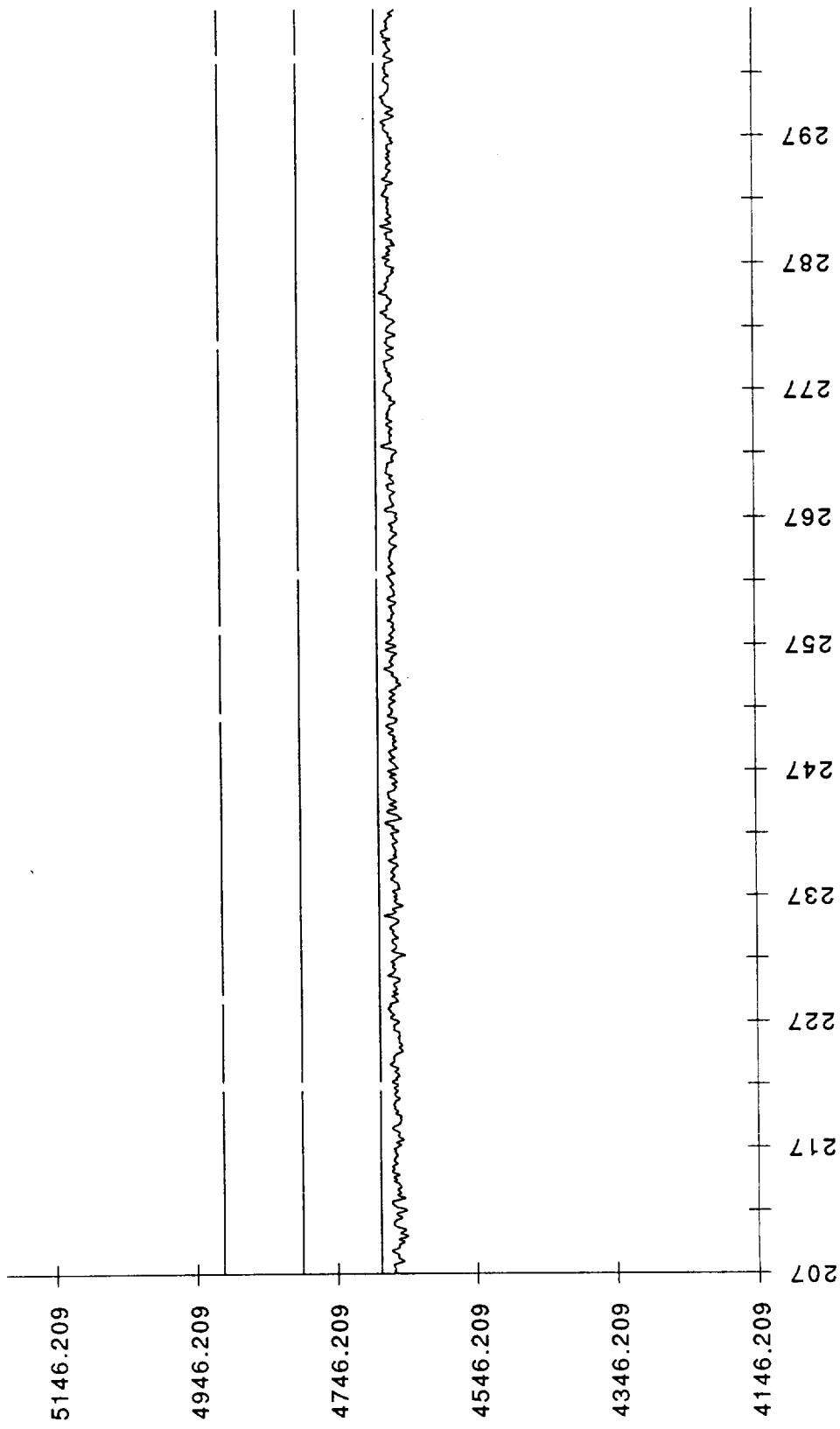
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901-579 HPFP bal cav pr.T



901-579 HPFP bal cav pr.T

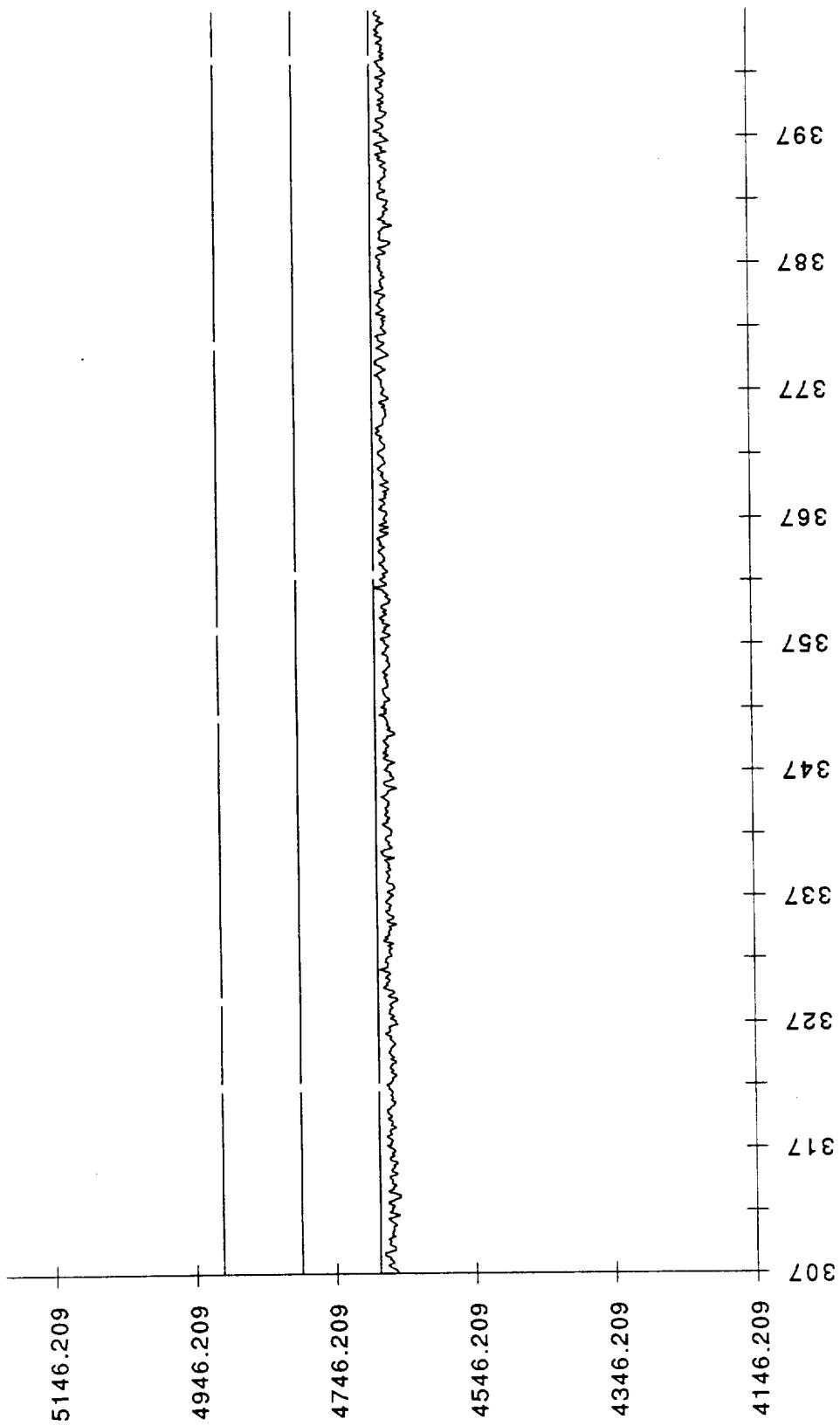
901-579 HPFP bal cav pr.T



901-579 HPFP bal cav pr.T

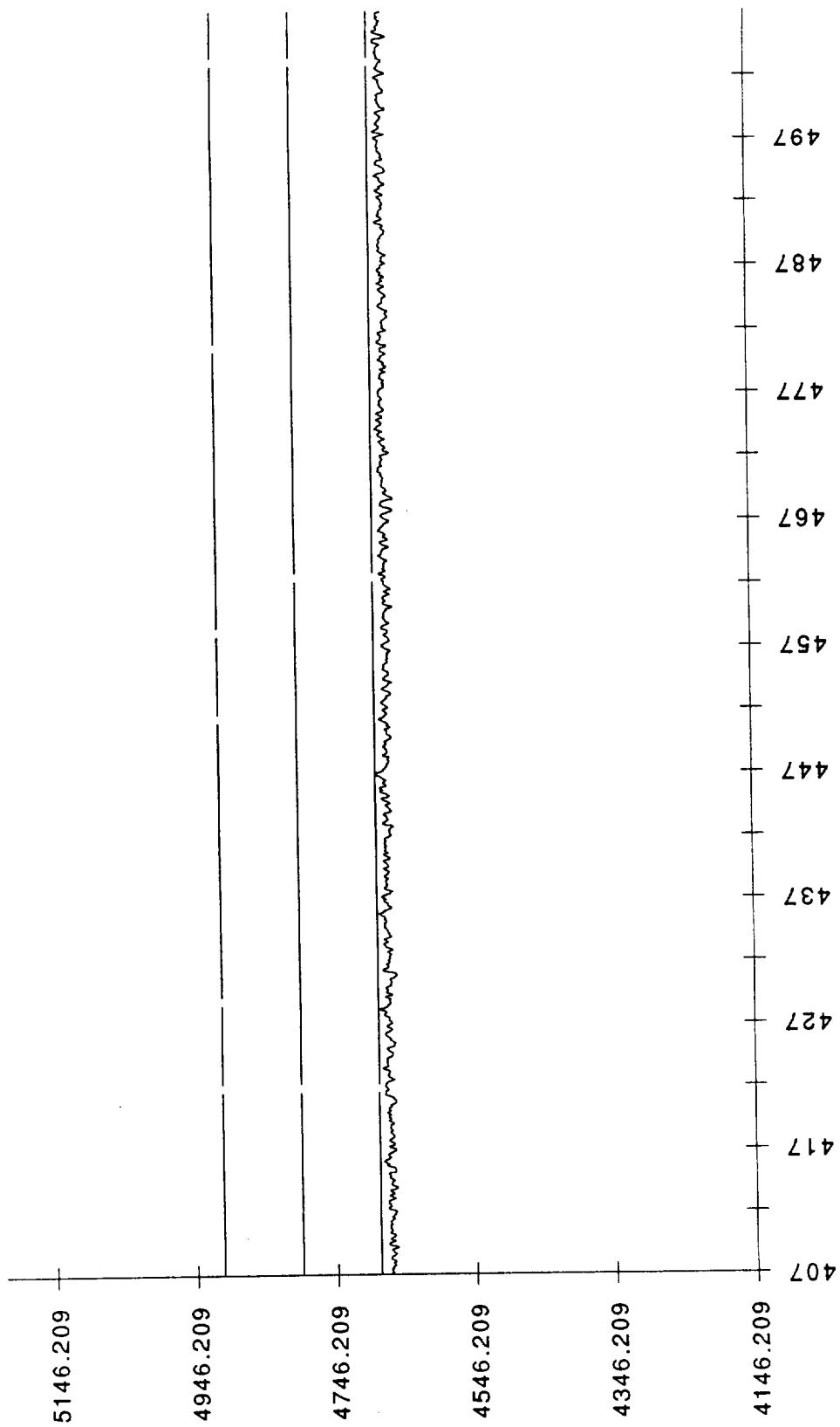
901-579 HPFP bal cav pr.T

901-579 HPFP bal cav pr.T

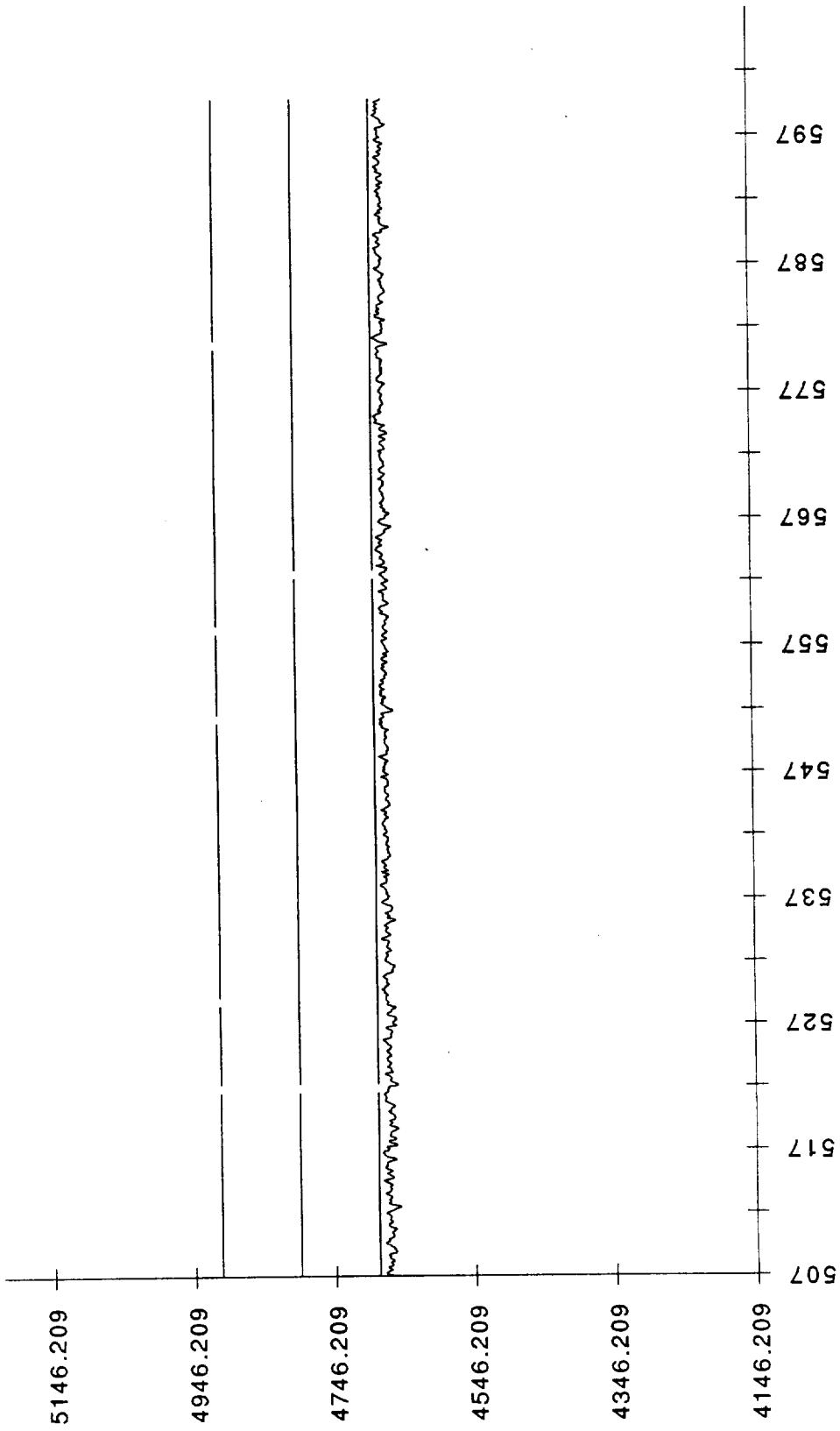


901-579 HPFP bal cav pr.T

901-579 HPFP bal cav pr.T

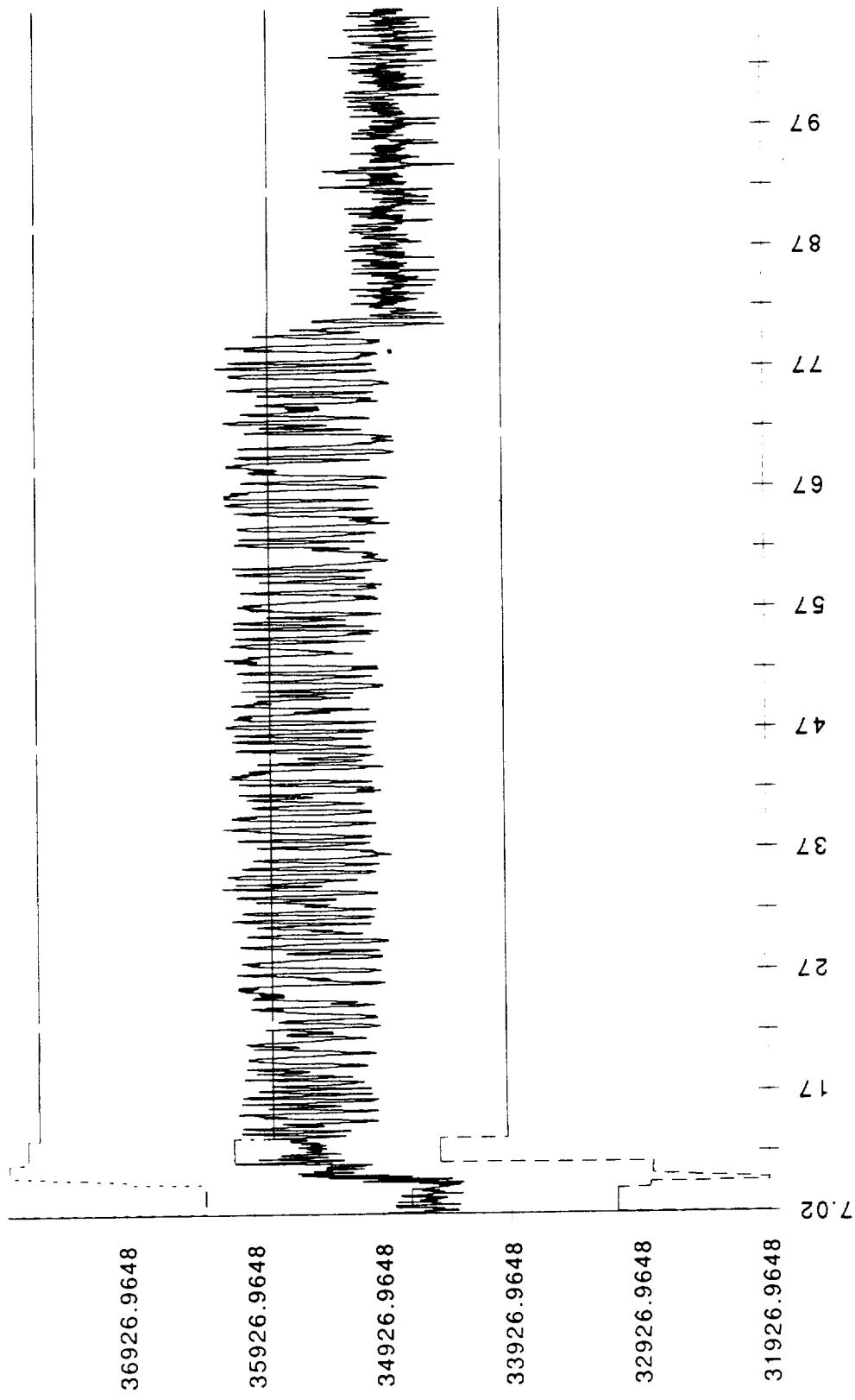


901-579 HPFP bal cav pr.T



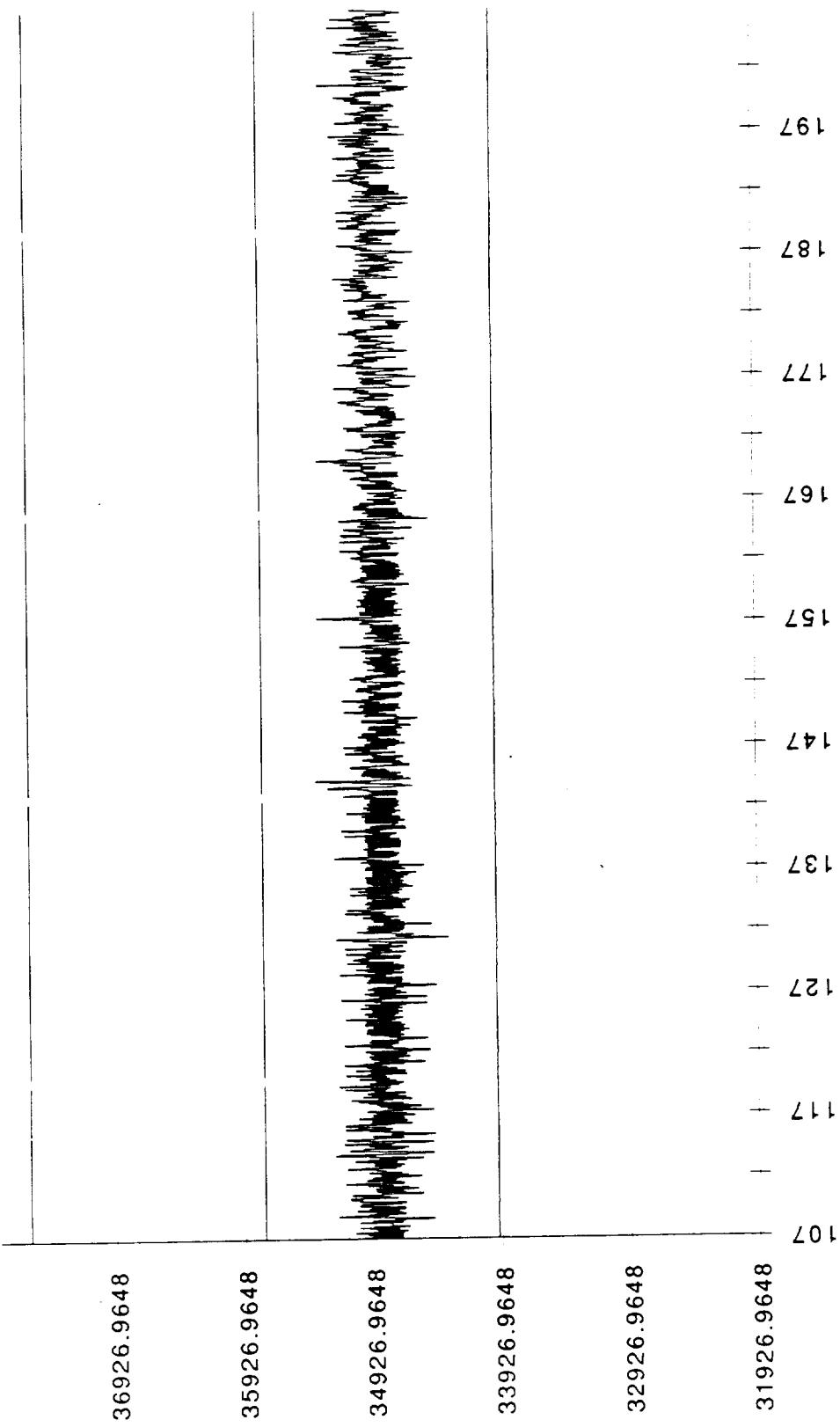
901-579 HPFP bal cav pr.T

901-579 HPFP sh sp.T



901-579 HPFP sh sp.T

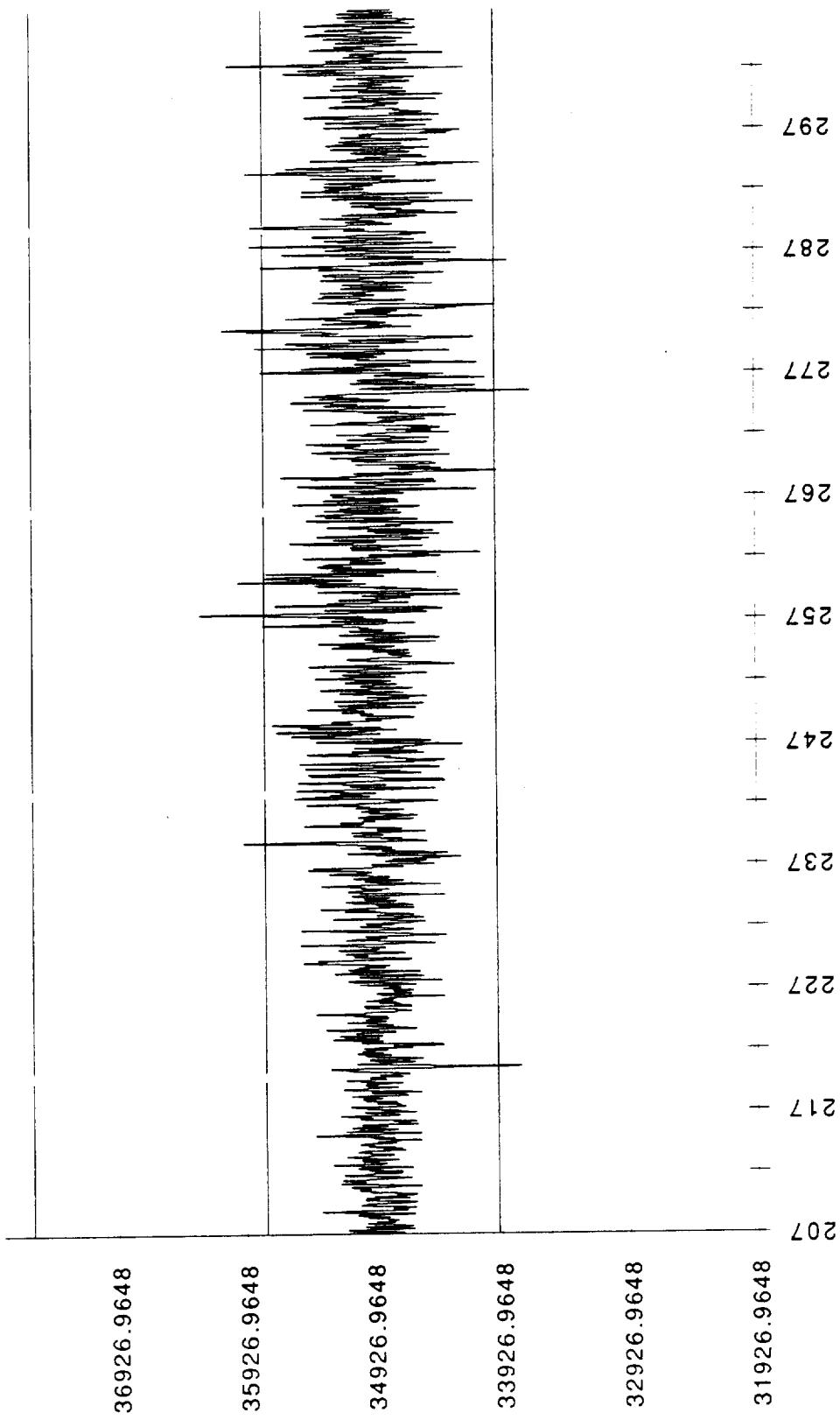
901-579 HPFP sh sp.T



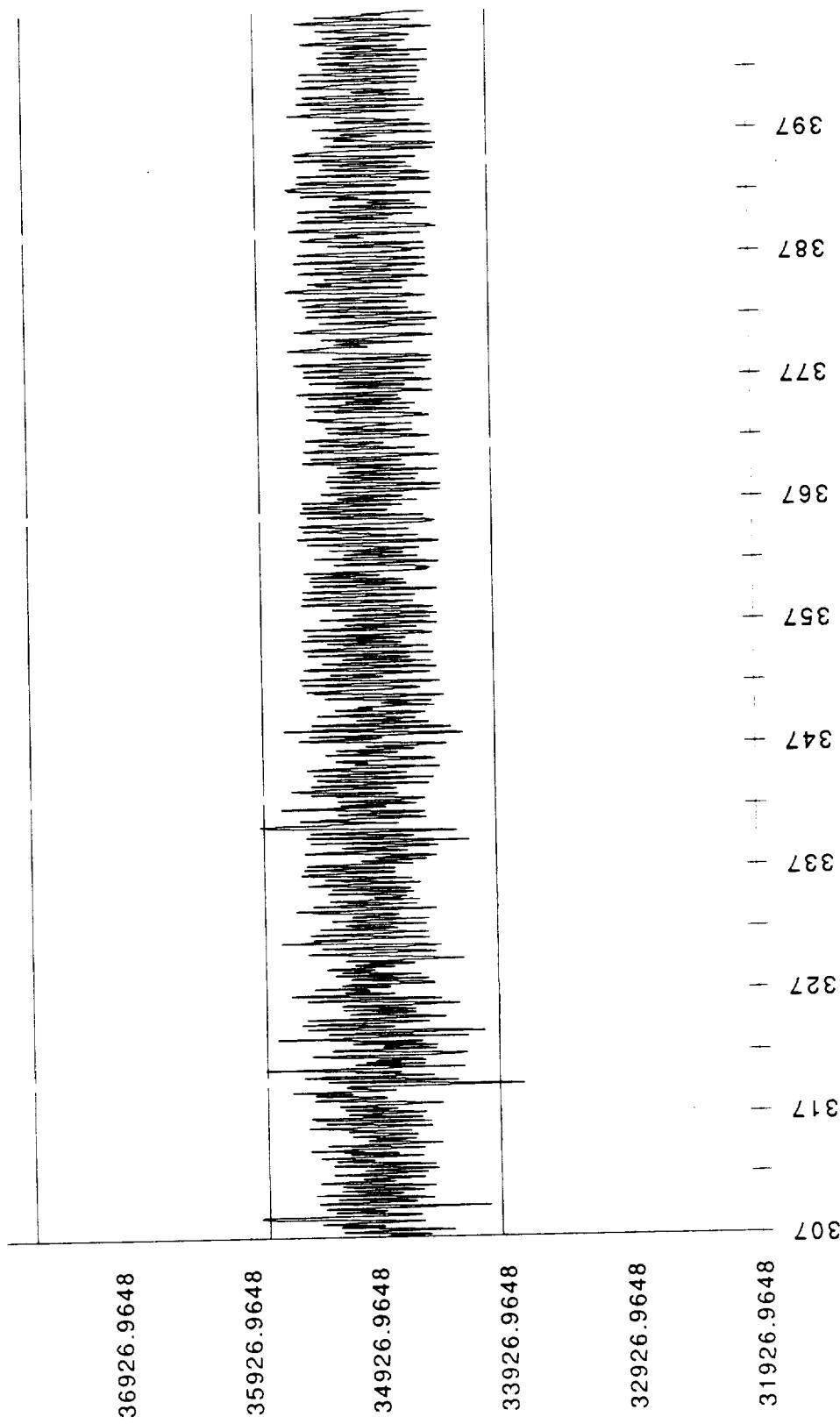
901-579 HPFP sh sp.T

901-579 HPFP sh sp.T

901-579 HPFP sh sp.T



901-579 HPFP sh sp.T



901-579 HPFP sh sp.T

901-579 HPFP sh sp.T

36926.9648

35926.9648

34926.9648

33926.9648

32926.9648

31926.9648

407

427

437

447

457

467

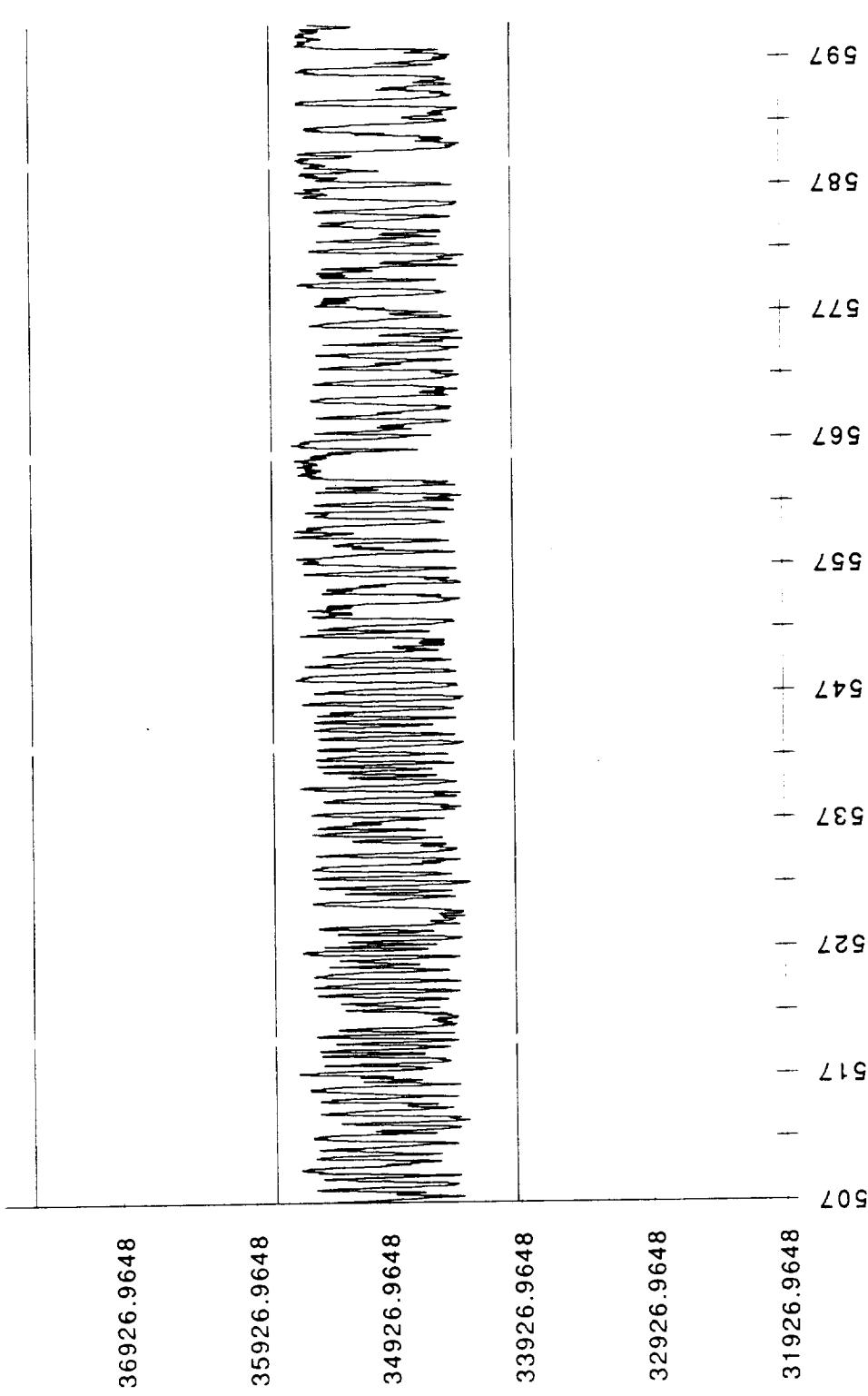
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487

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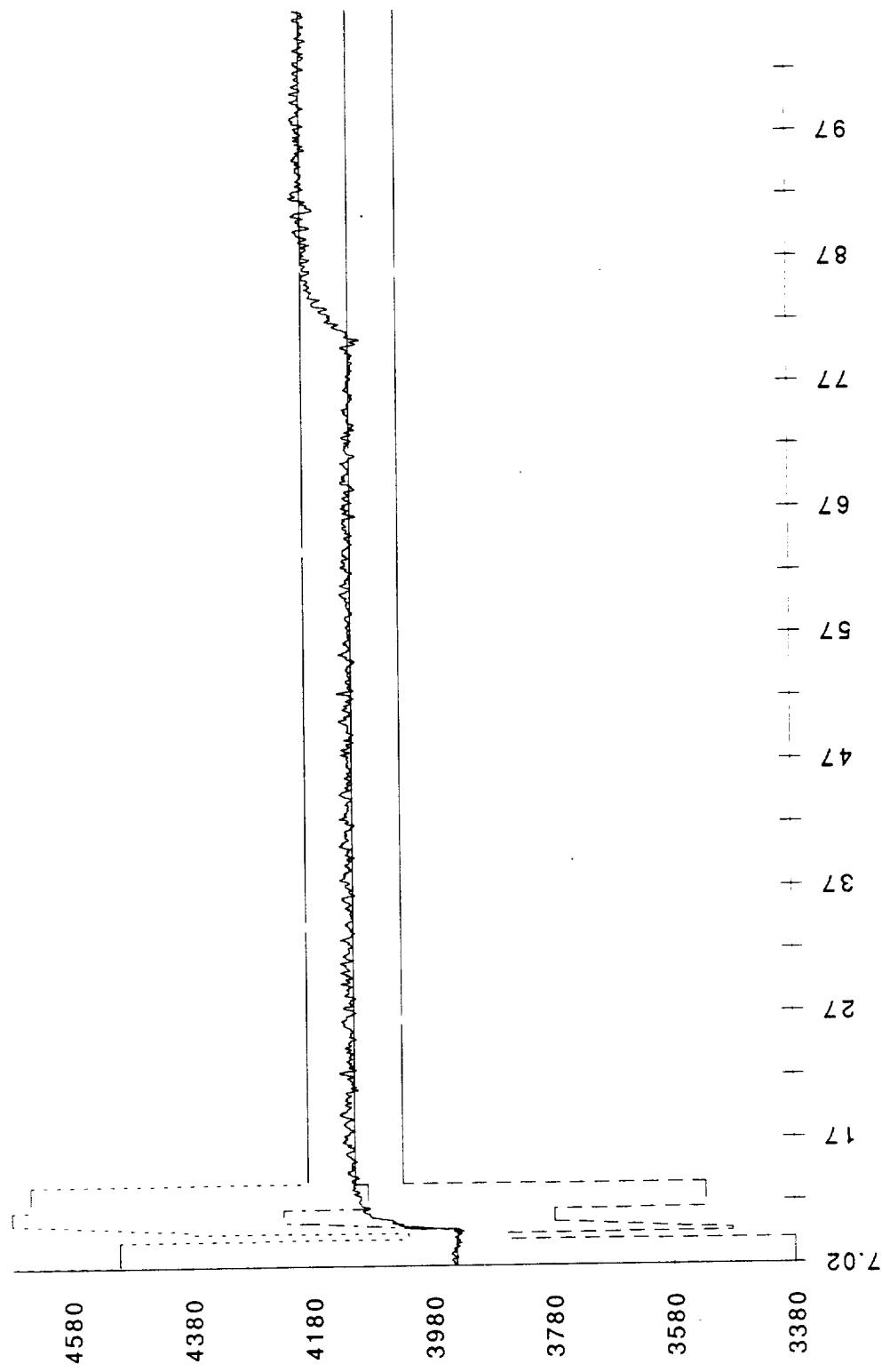
901-579 HDP sh sp.T

901-579 HPFP sh sp.T



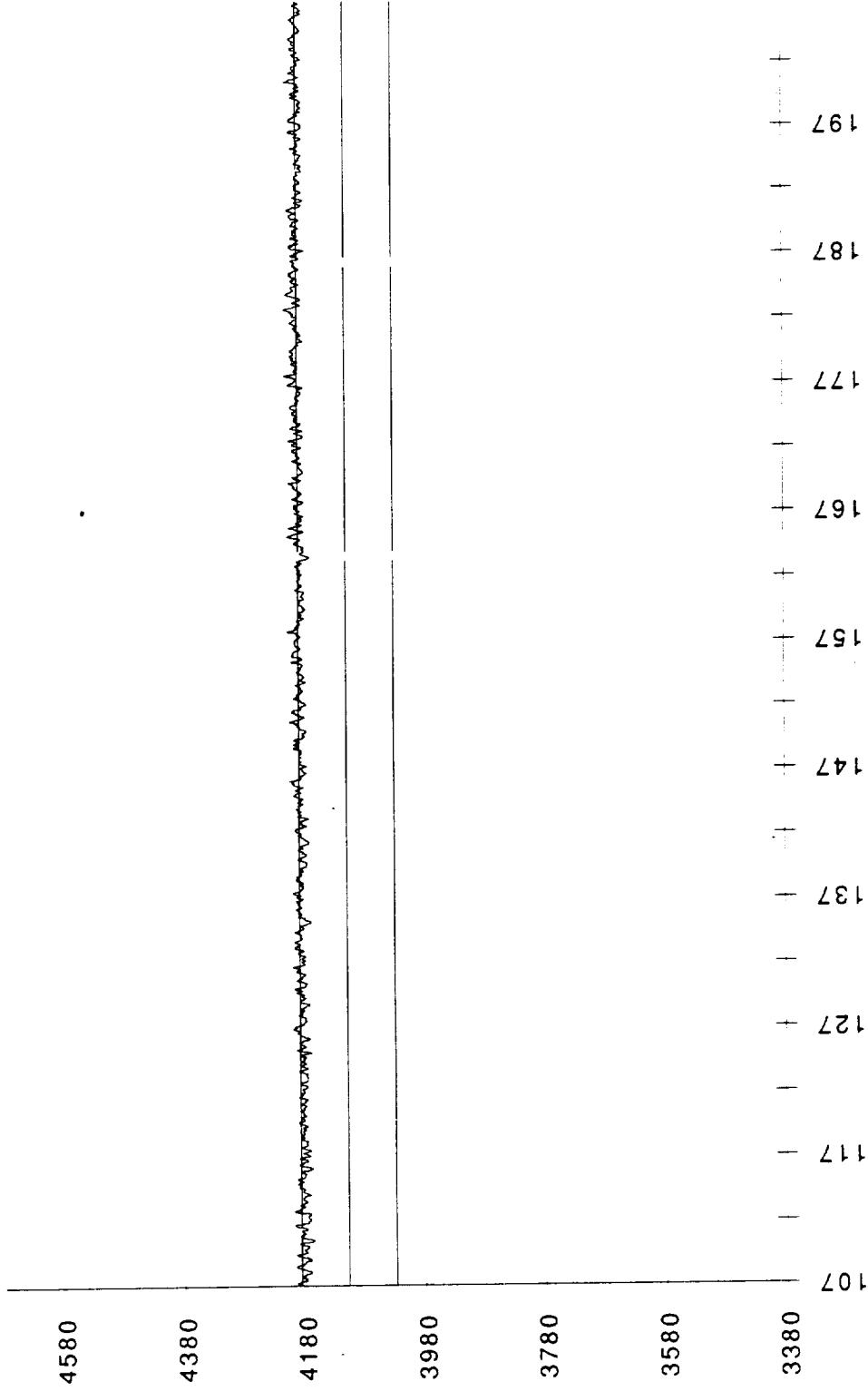
901-579 HPEP sh sp.T

901-579 HPOP dis pr.T



901-579 HPnP dis pr.T

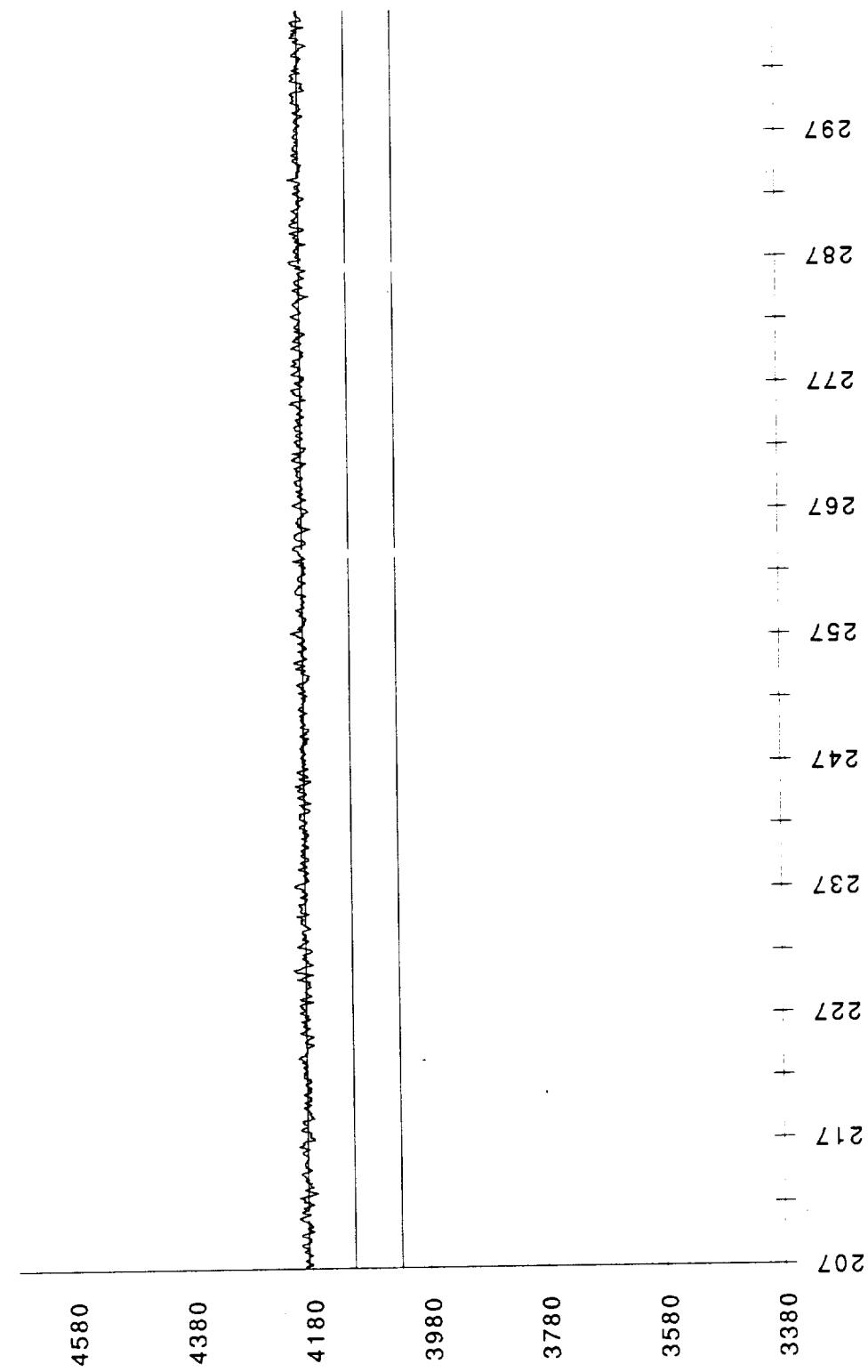
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901-579 HPnP dis pr.T

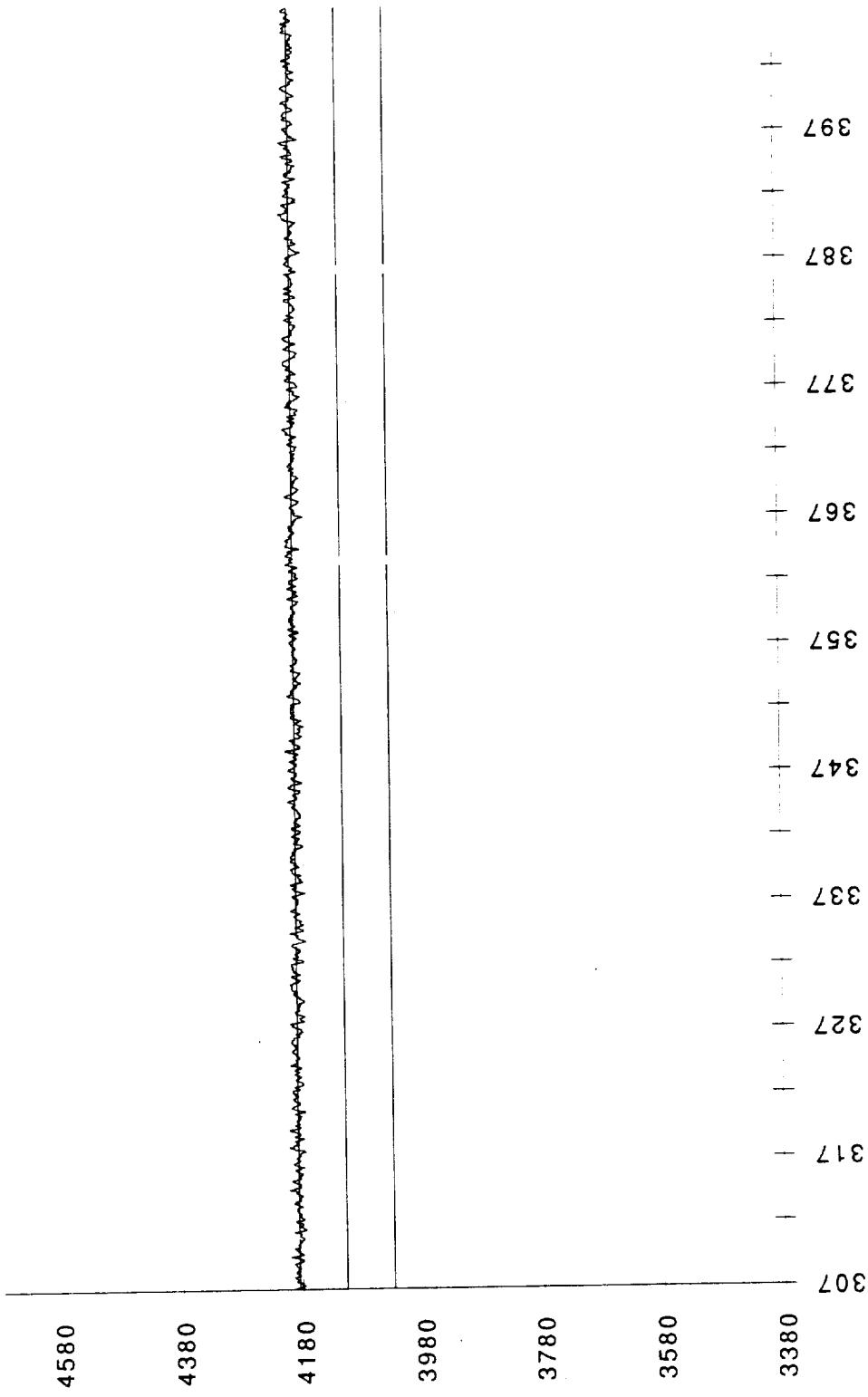
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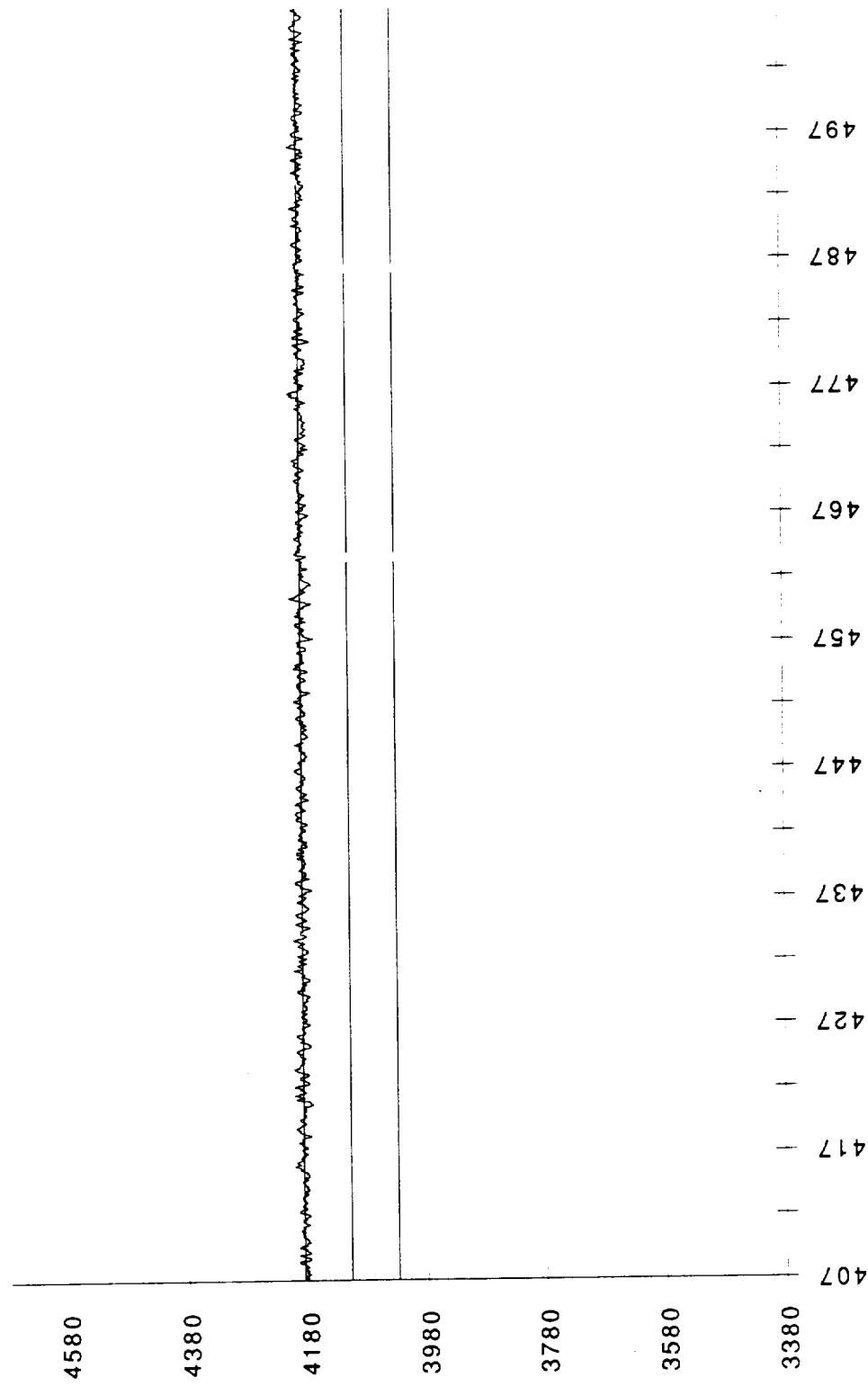
901-579 HPOP dis pr.T



901-579 HPDP dis pr.T

901-579 HPOP dis pr.T





901-579 HPDP dis pr.T

901-579 HPOP dis pr.T

4580

4380

4180

3980

3780

3580

3380

507

517

527

537

547

557

567

587

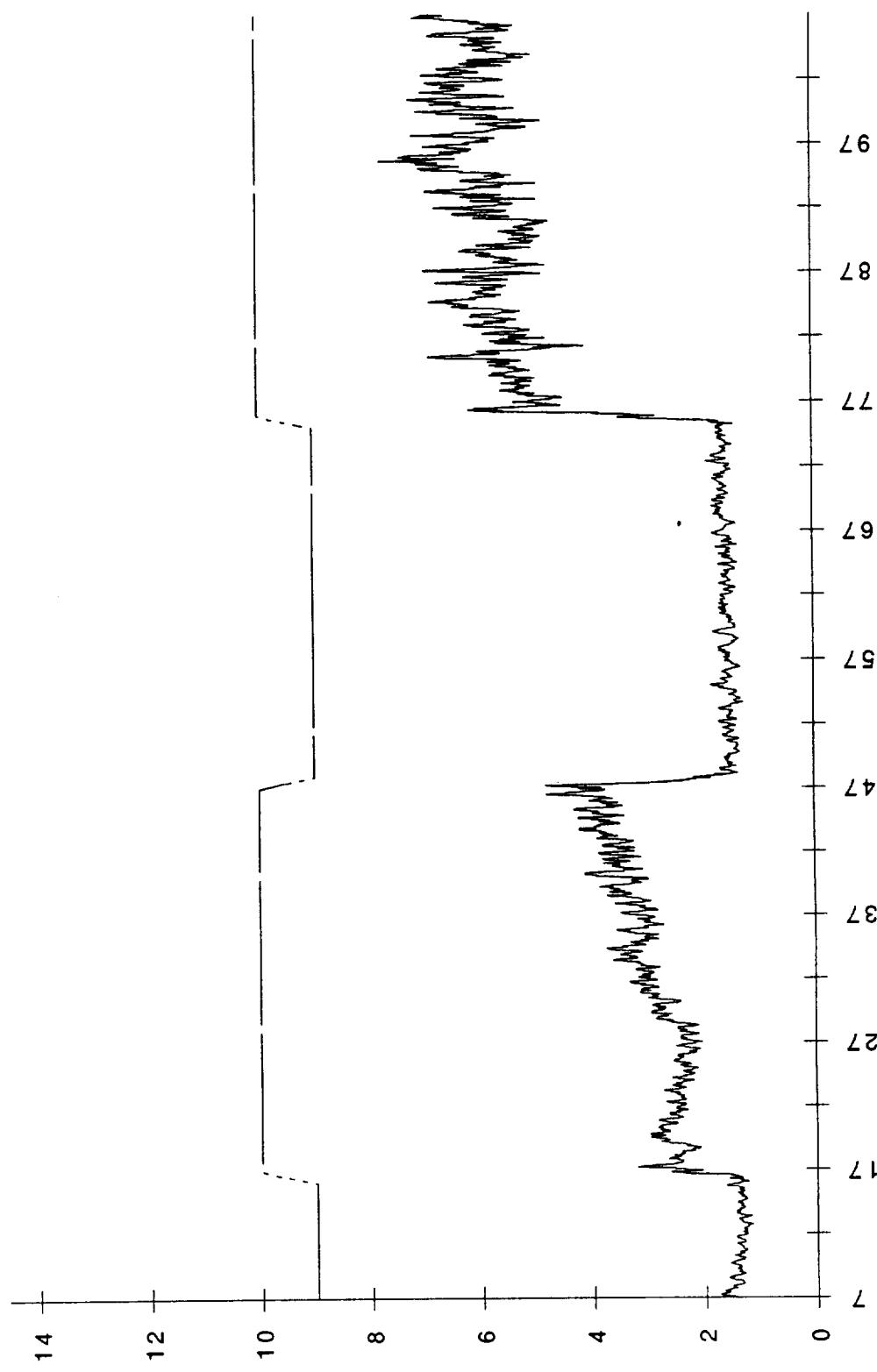
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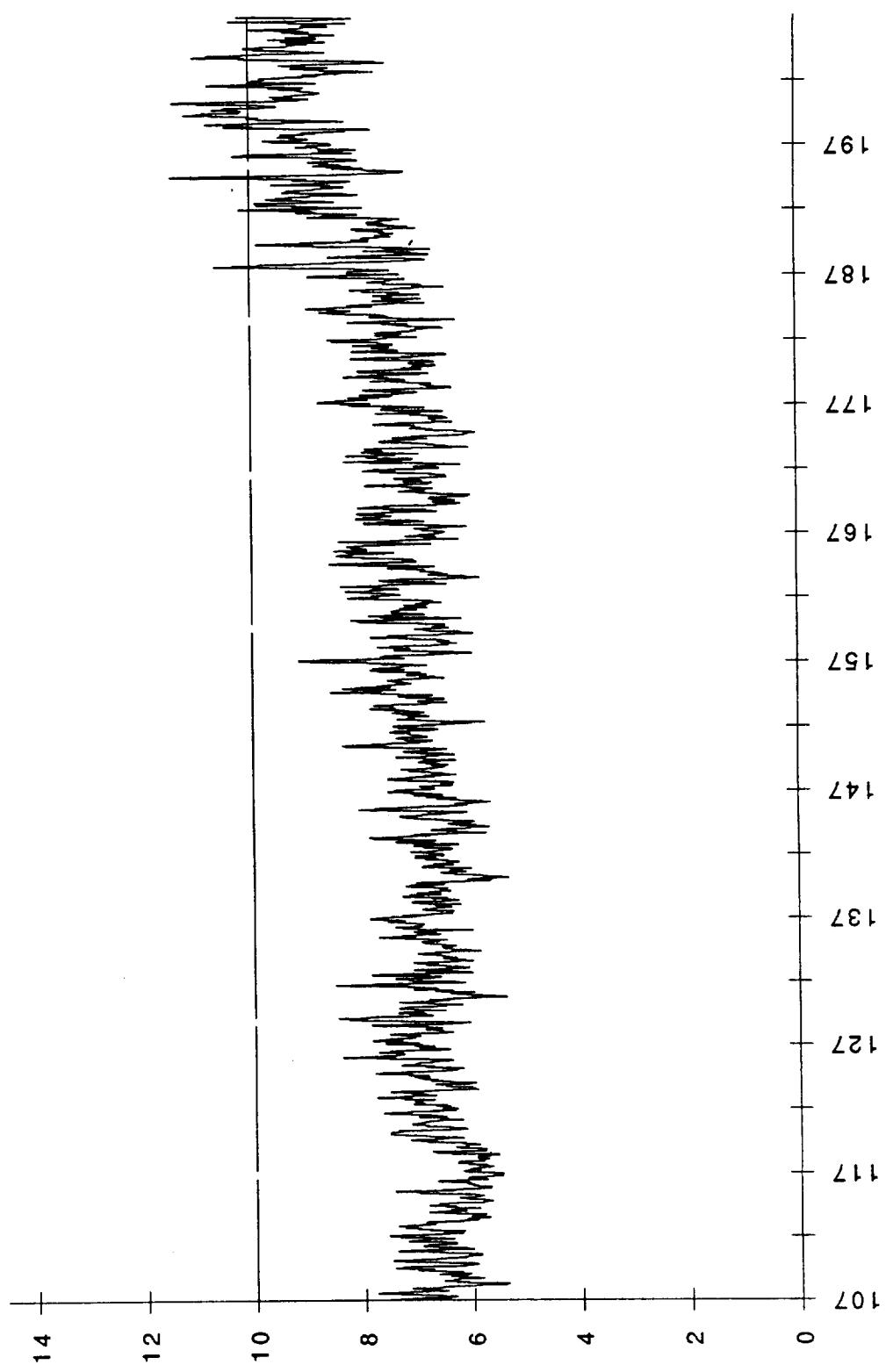
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901-655 HPFP accel.T



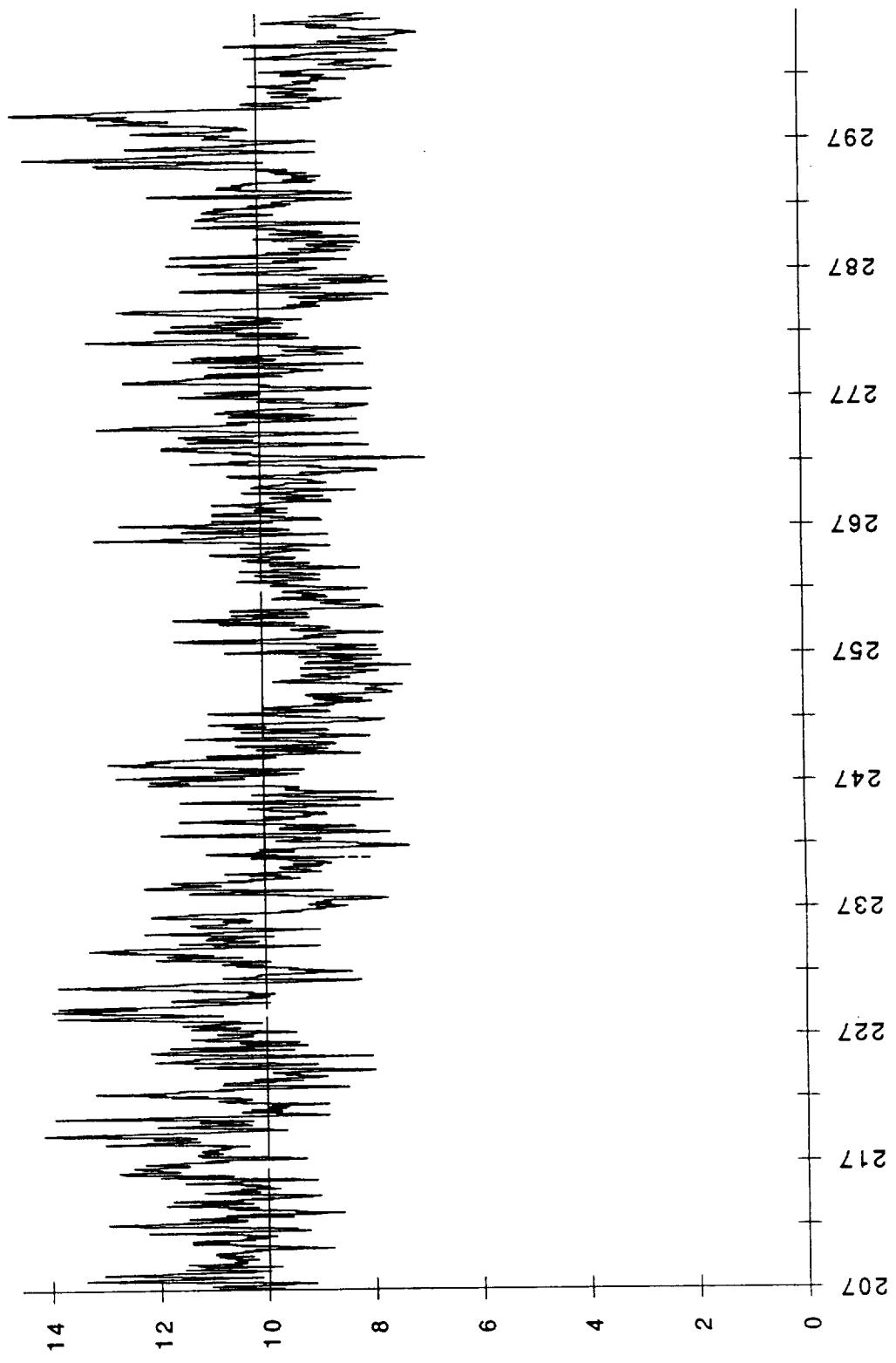
901-655 HPFP accel.T

901-655 HPFP accel.T



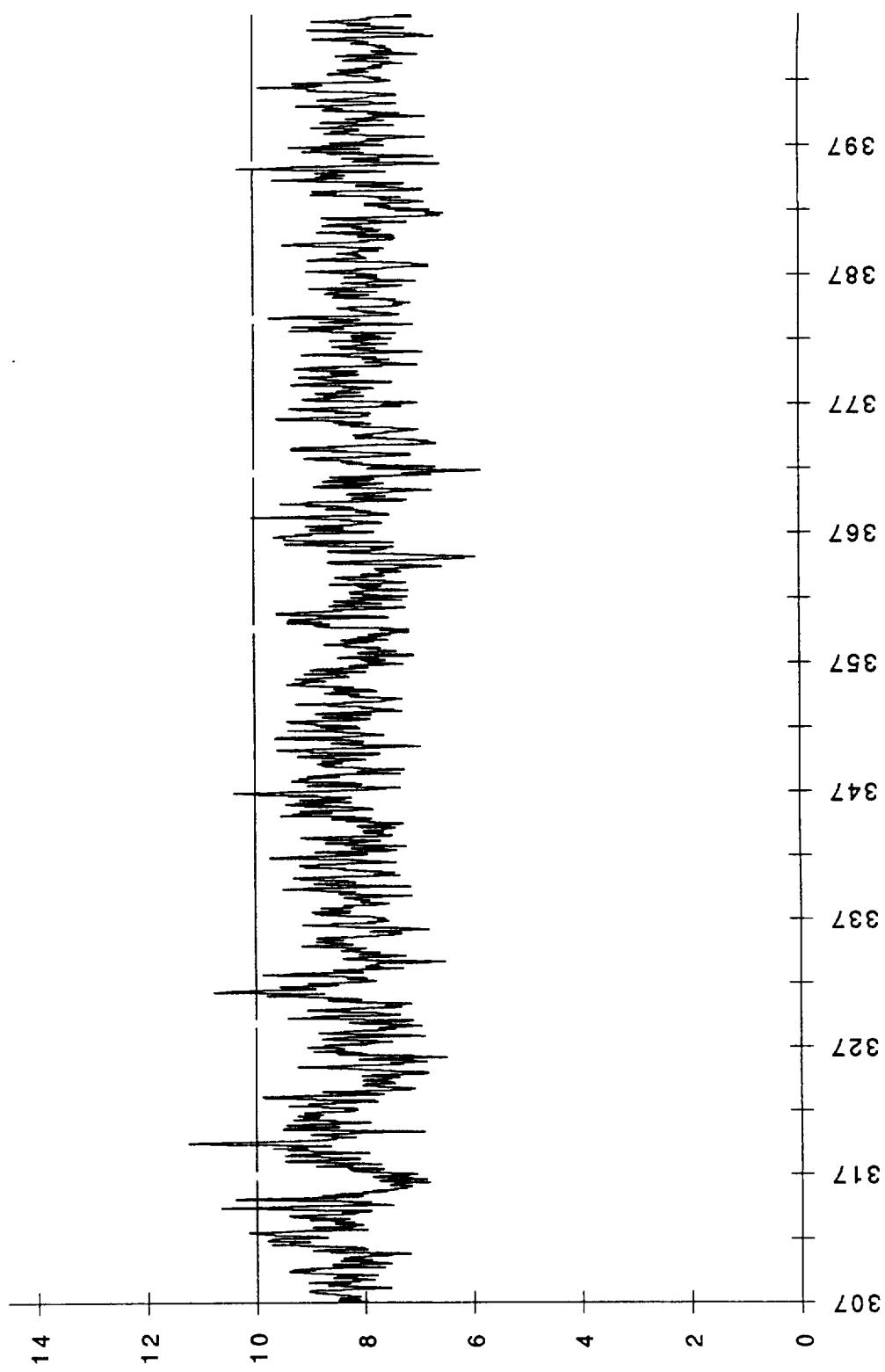
901-655 HPFP accel.T

901-655 HPFP accel.T



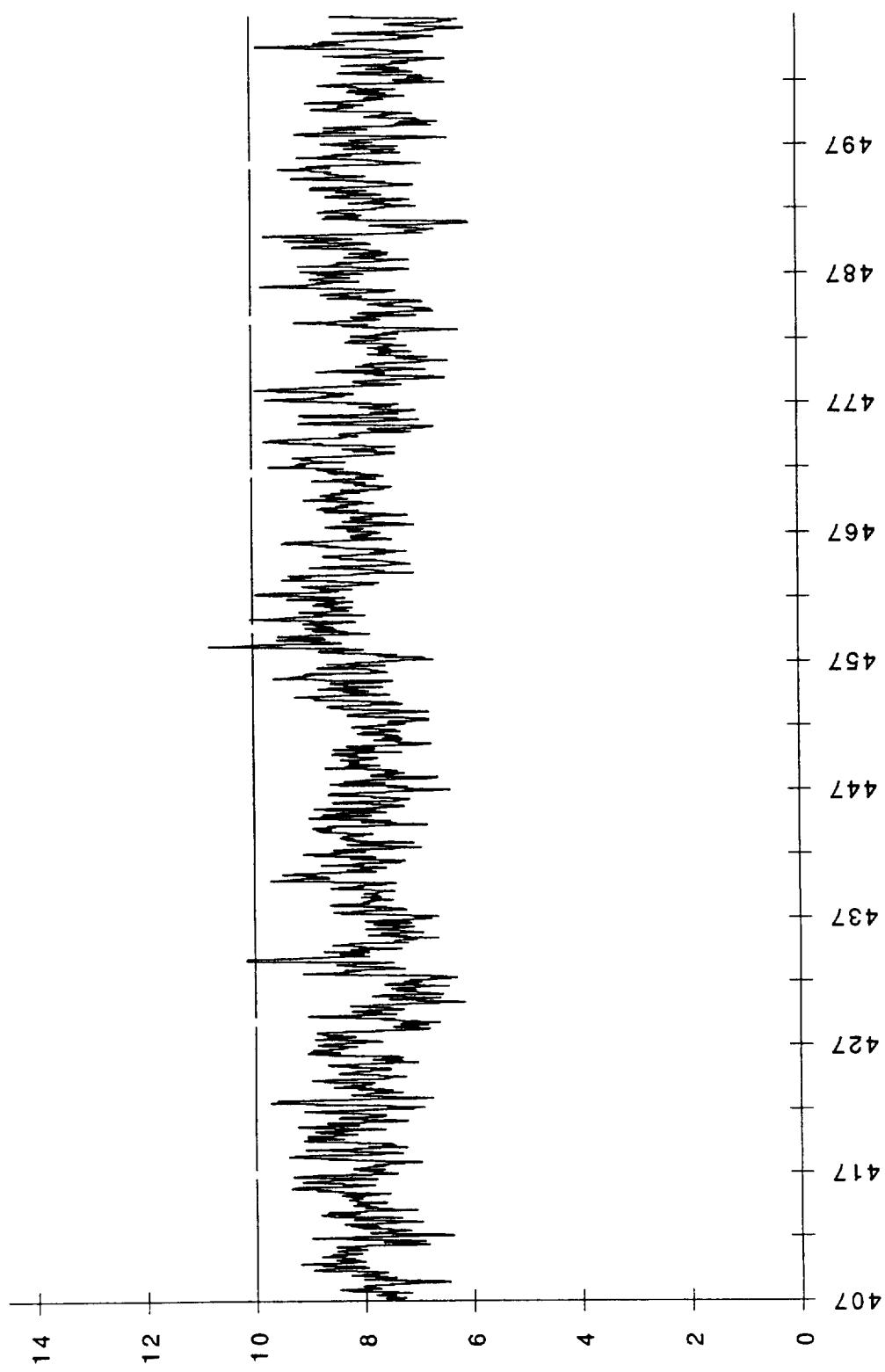
901-655 HPFP accel.T

901-655 HPFP accel.T



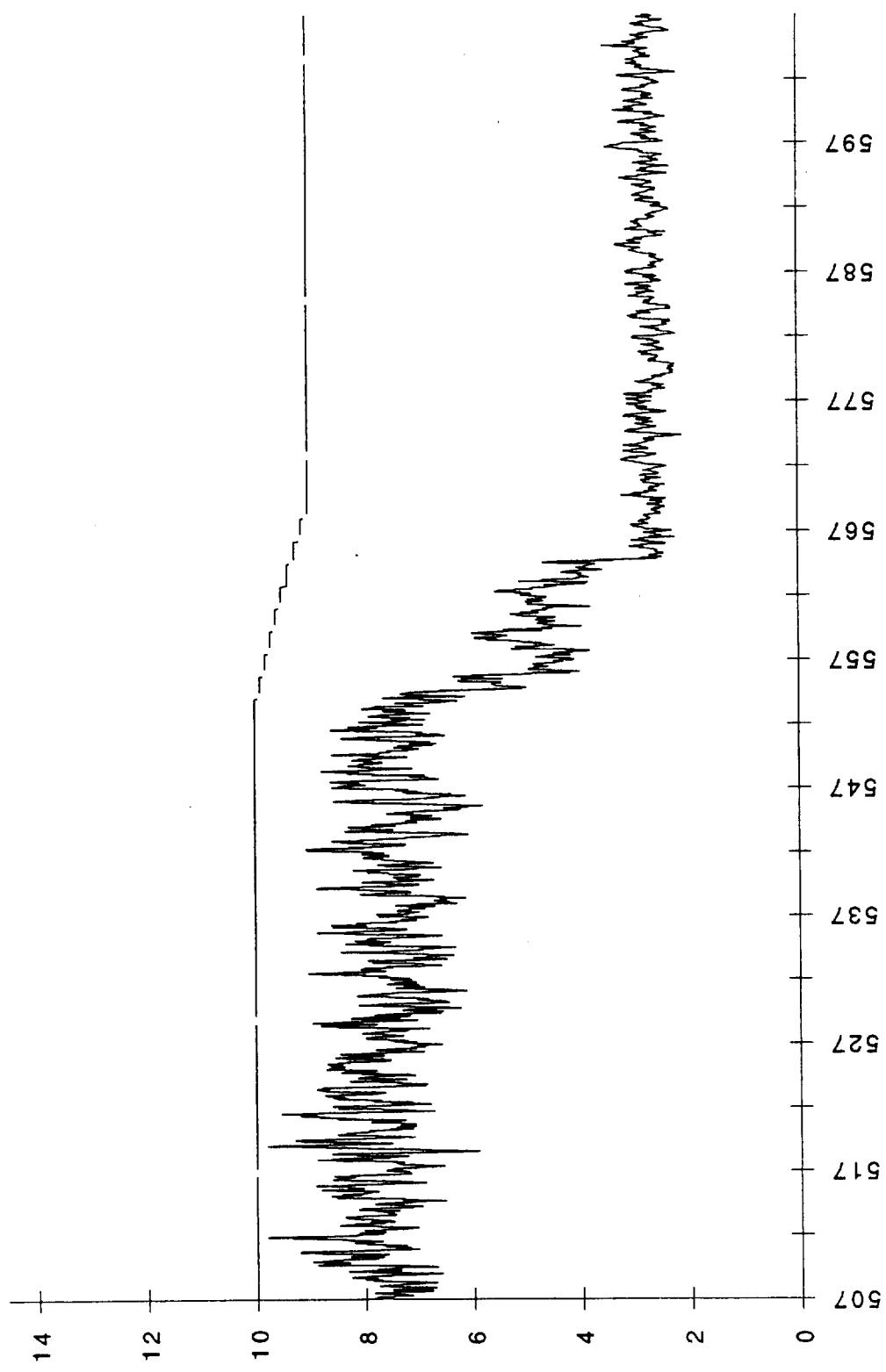
901-655 HPFP accel.T

901-655 HPFP accel.T



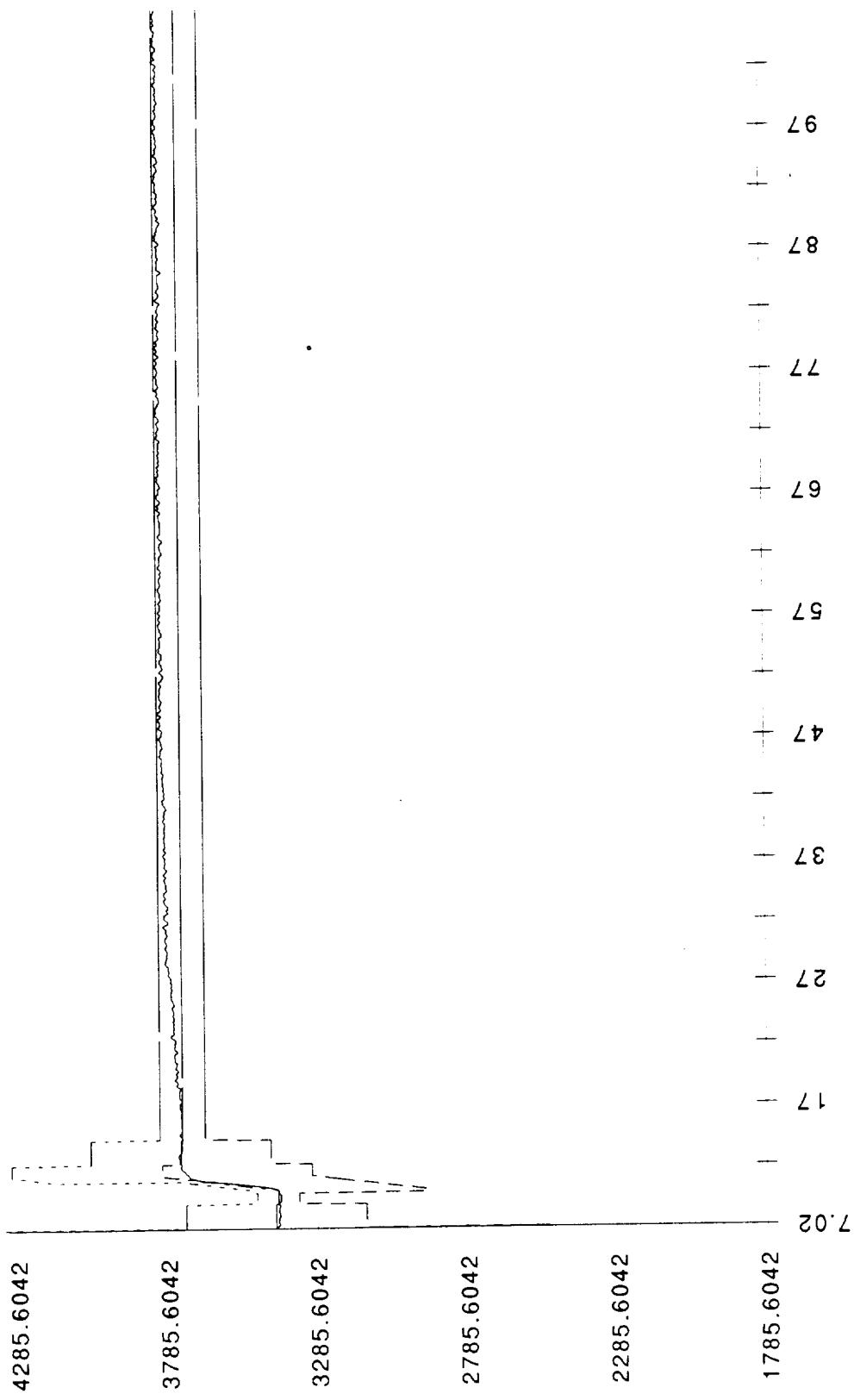
901-655 HPFP accel.T

901-655 HPFP accel.T



901-655 HPFP accel.T

902-248 HPFP CL pr.T



902-248 H⁺-CL pr.T

902-248 HPFP CL pr.T

4285.6042

3785.6042

3285.6042

2785.6042

2285.6042

1785.6042

108

118

138

148

158

168

178

188

198

902-248 Hr-P CL pr.T

4285.6042

3785.6042

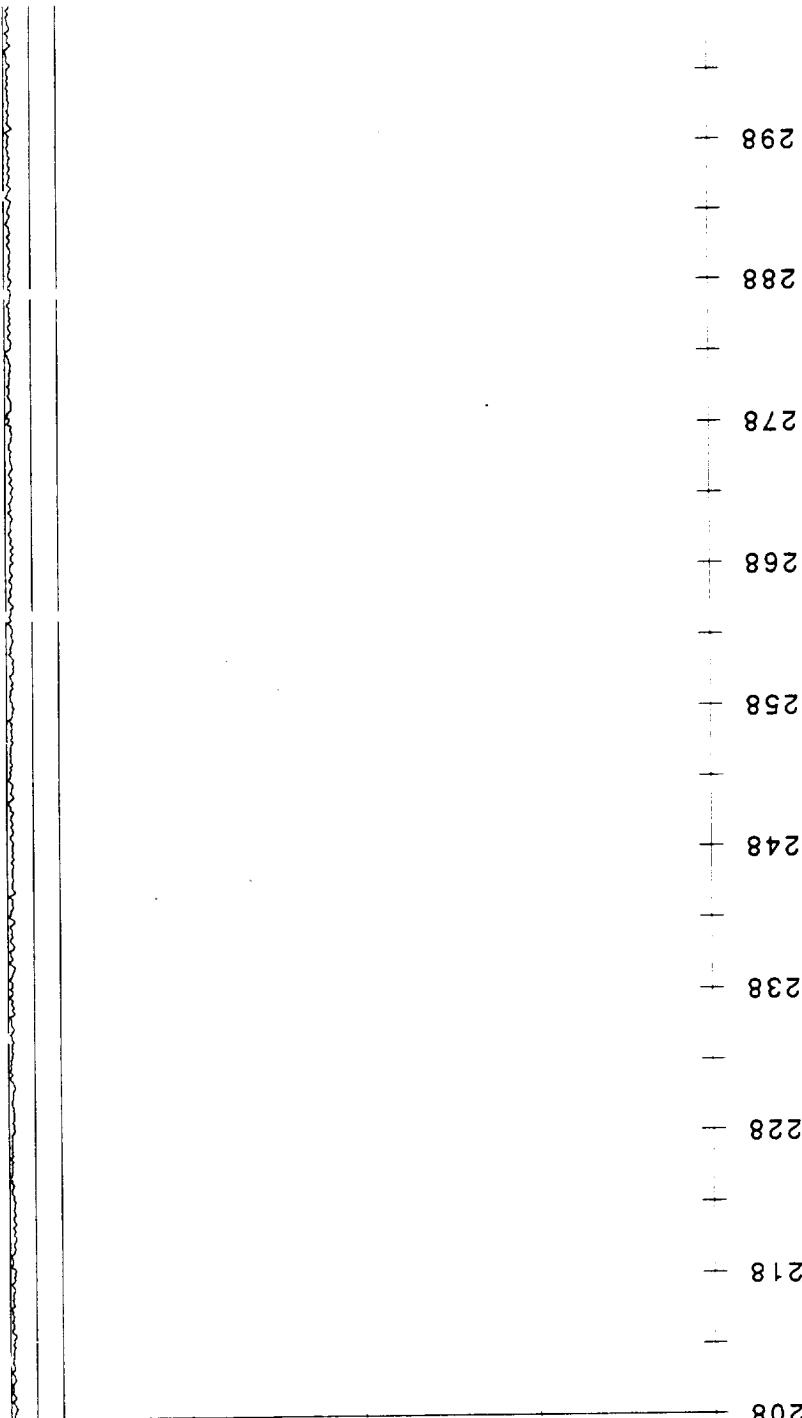
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2785.6042

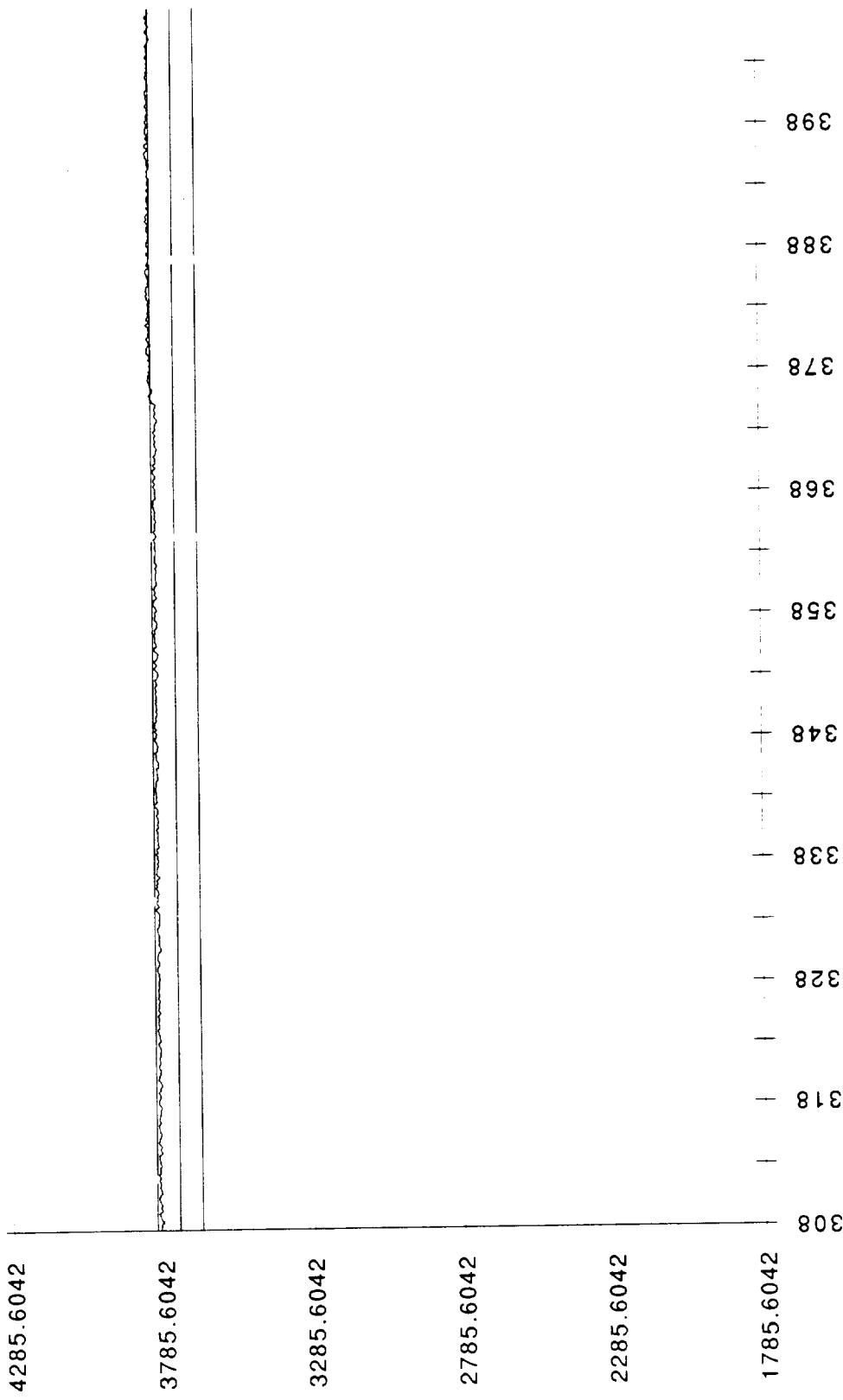
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1785.6042

1285.6042



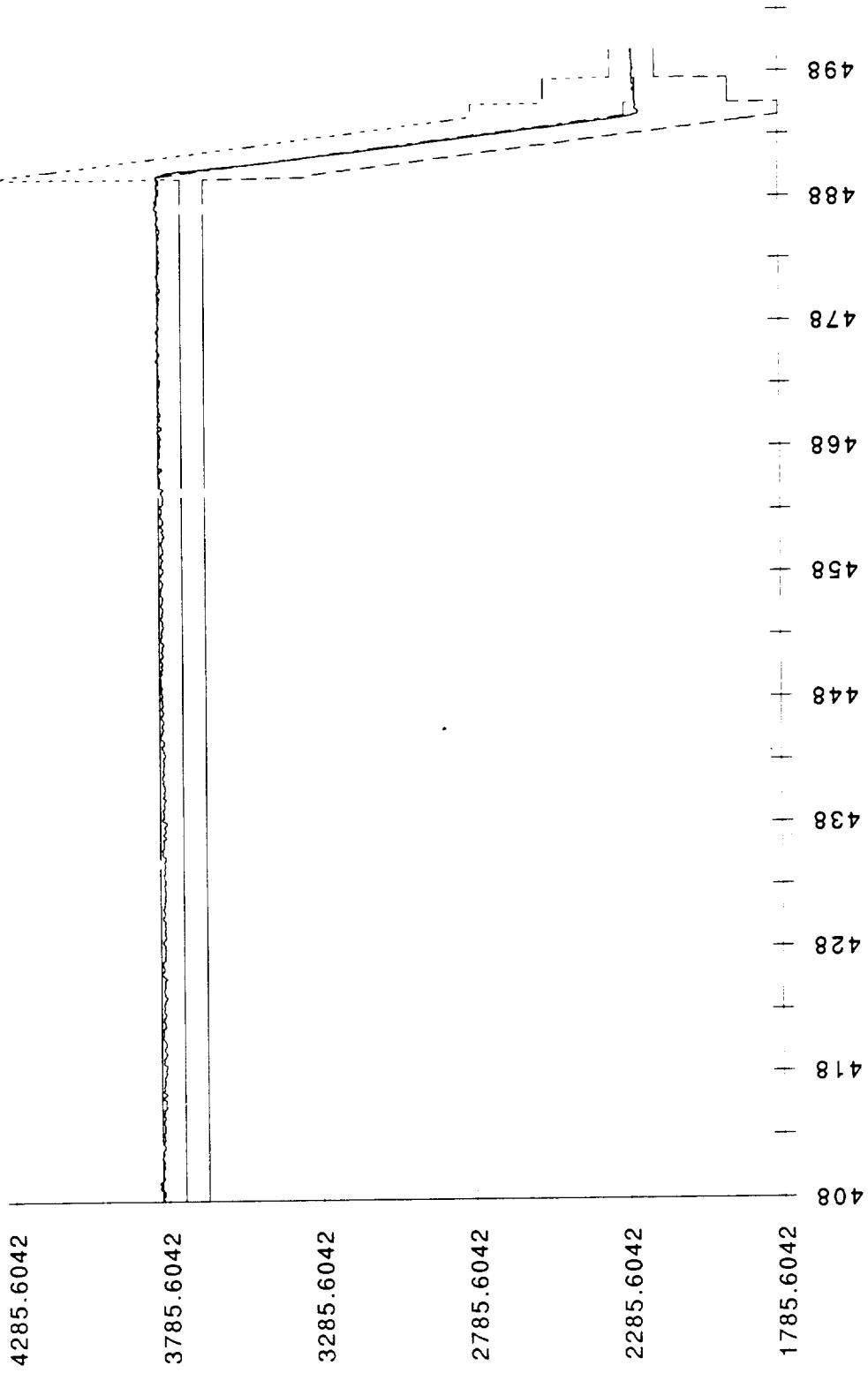
902-248 HPFP CL pr.T



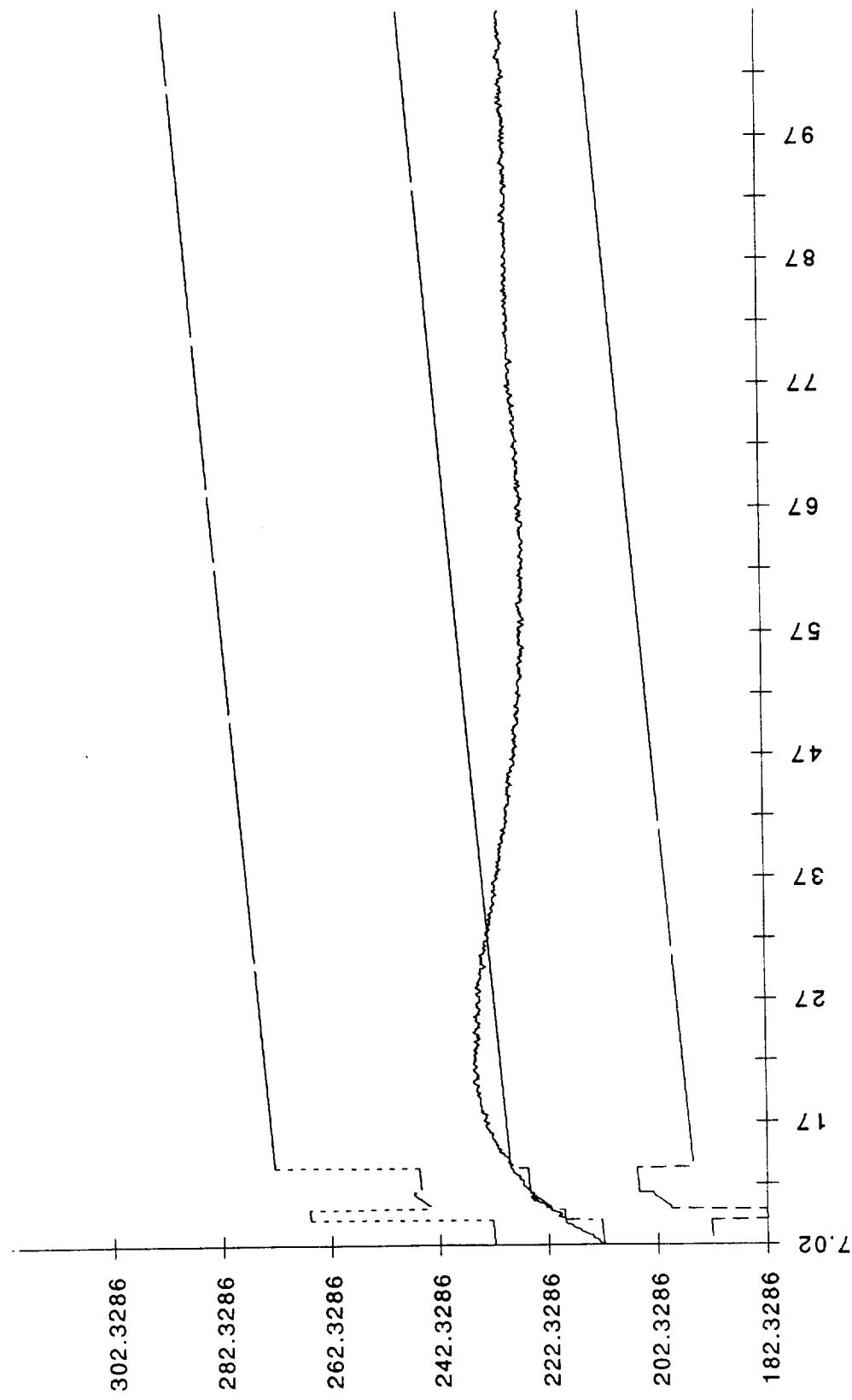
902-248 $\mu^- \rightarrow$ CL pr.T

902-248 Hr-P CL pr.T

902-248 HPFP CL pr.T

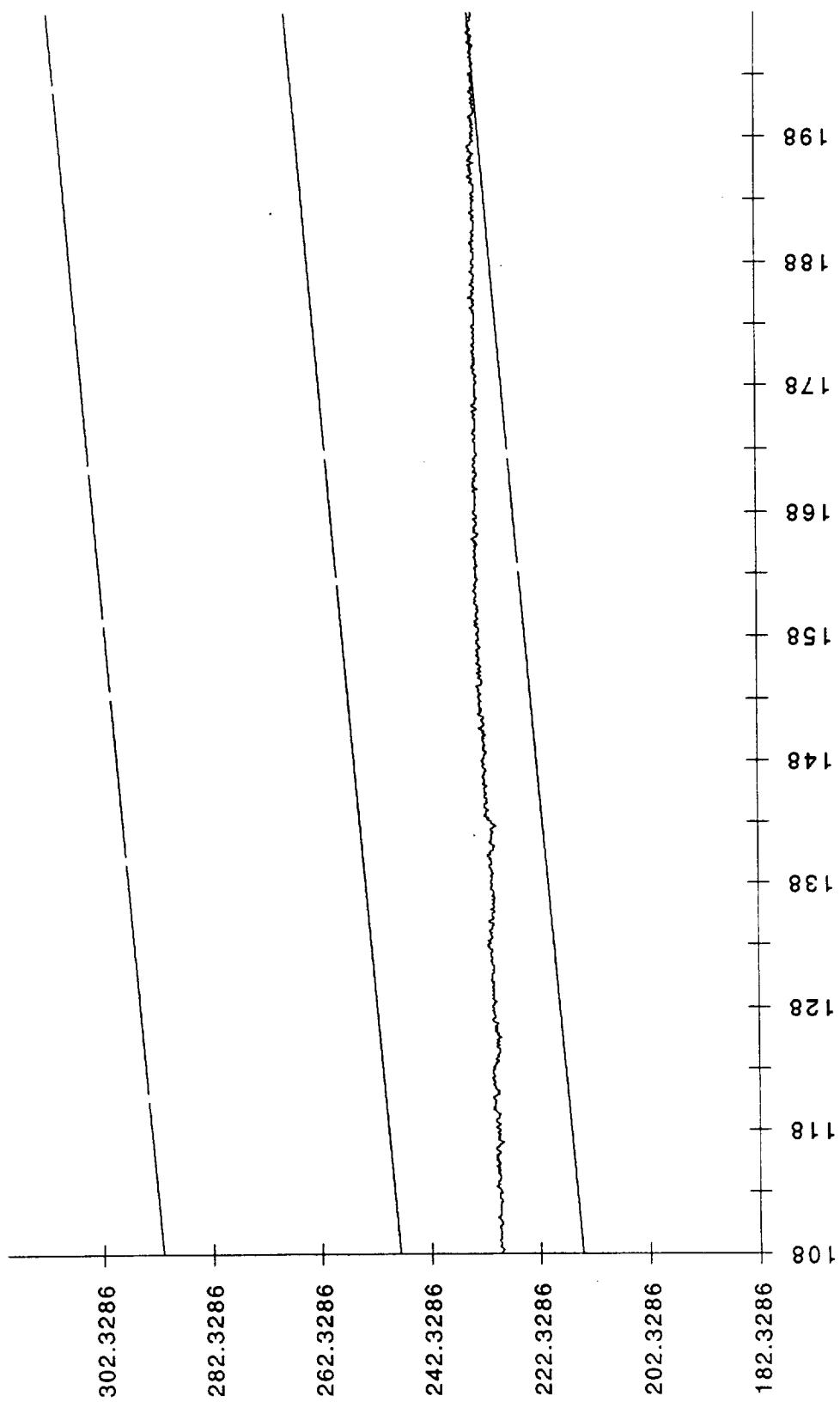


902-248 HPOP IMSL pr.T



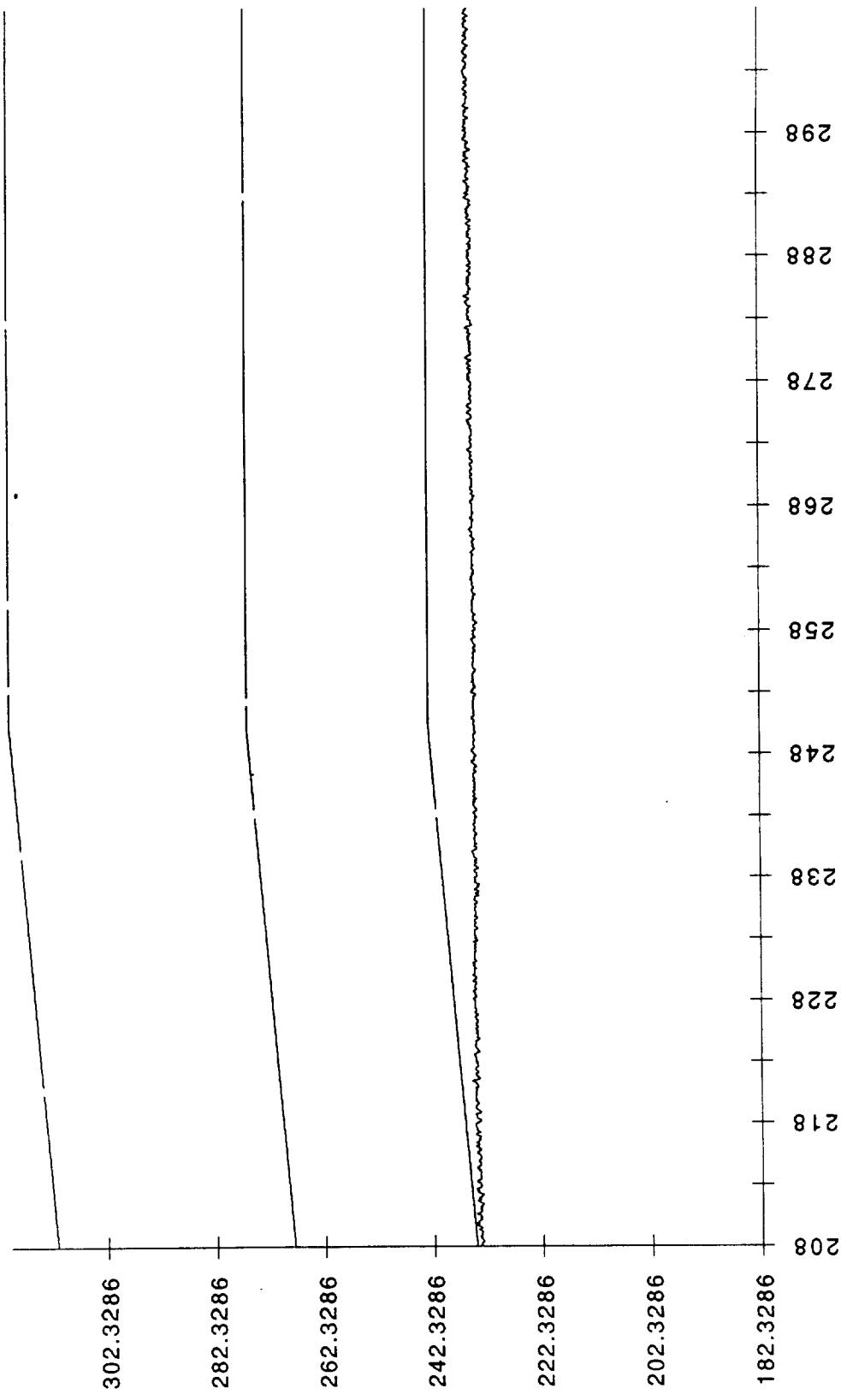
902-248 HPOP IMSL pr.T

902-248 HPOP IMSL pr.T



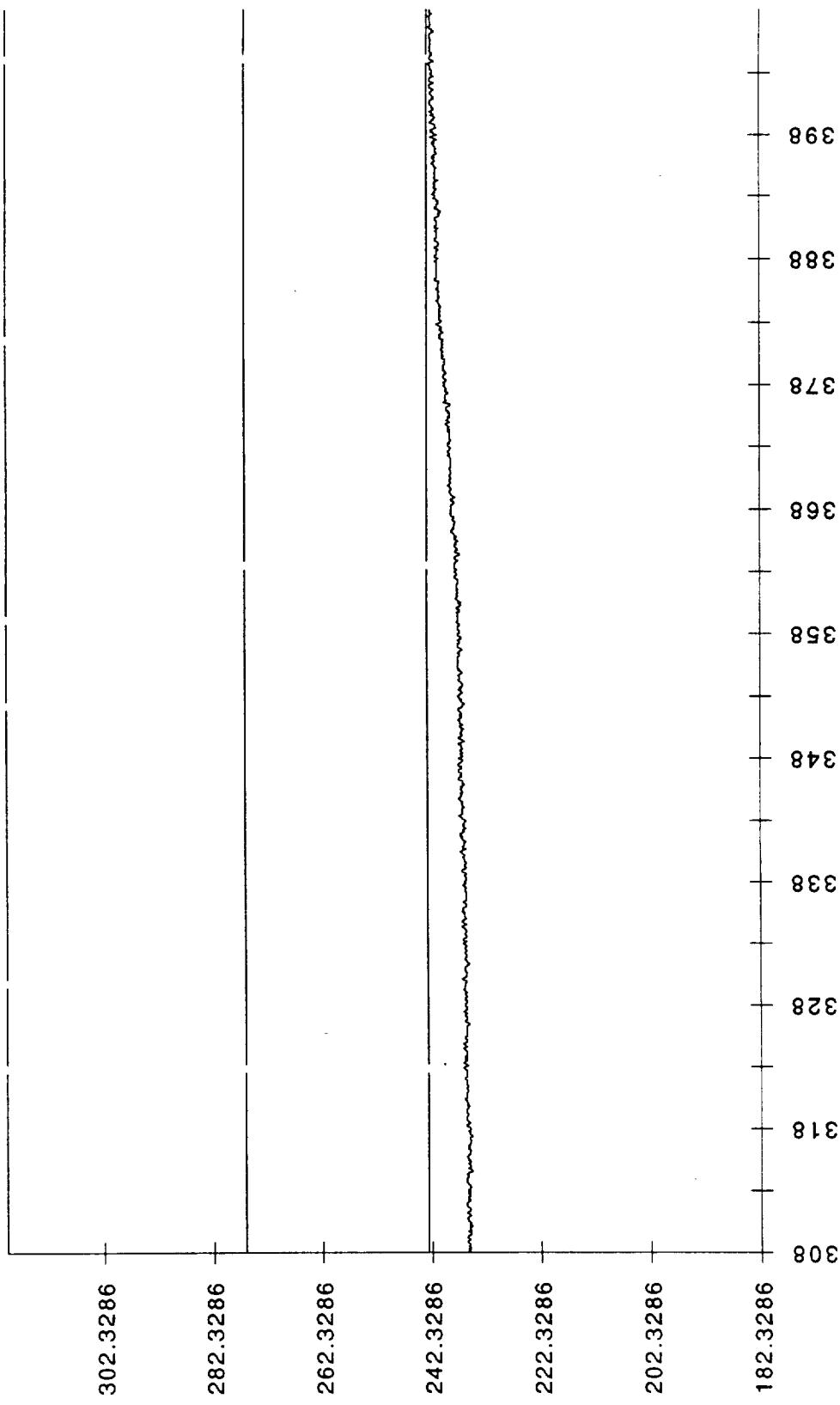
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902-248 HPQP IMSL pr.T



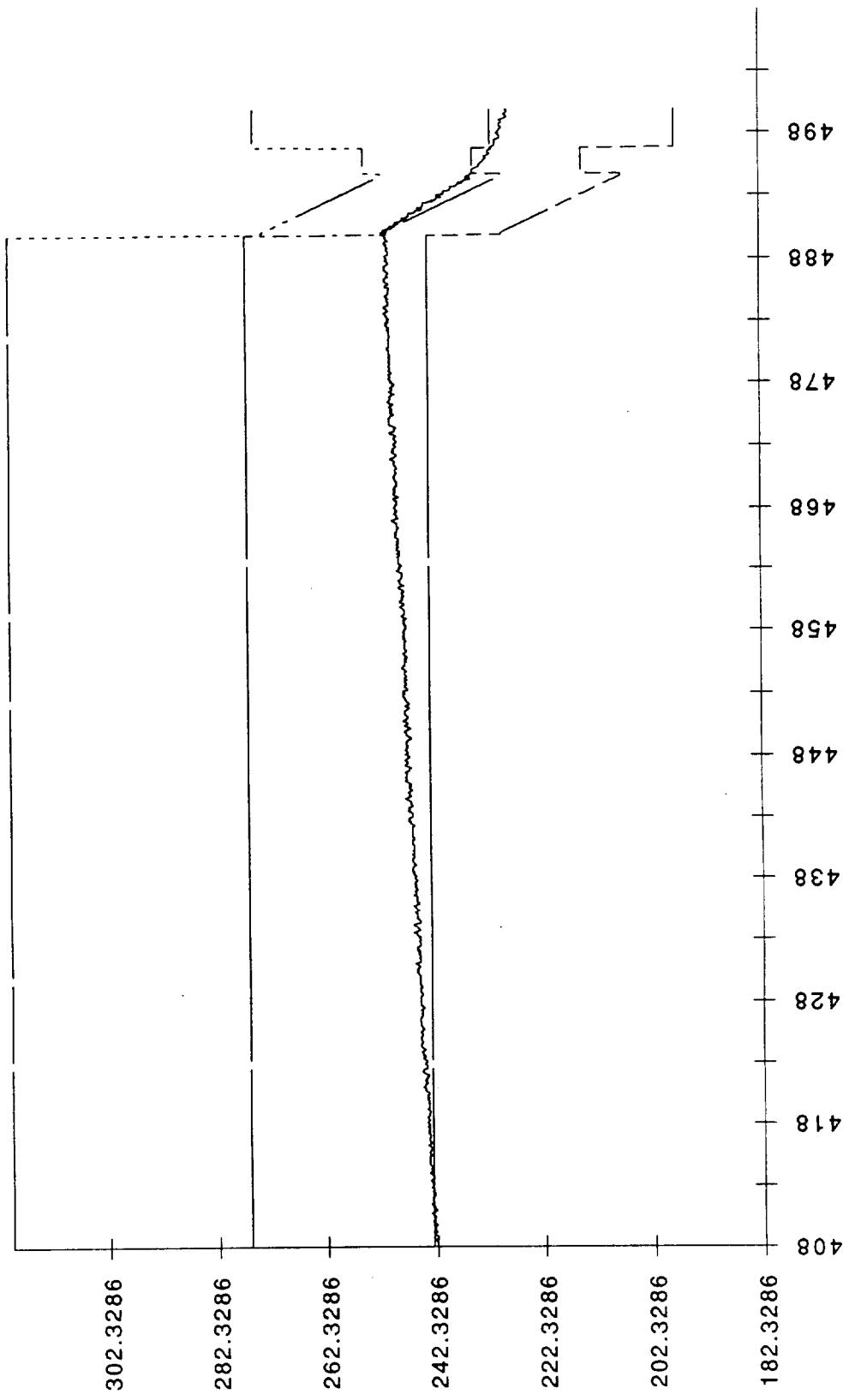
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902-248 HPOP IMSL pr.T



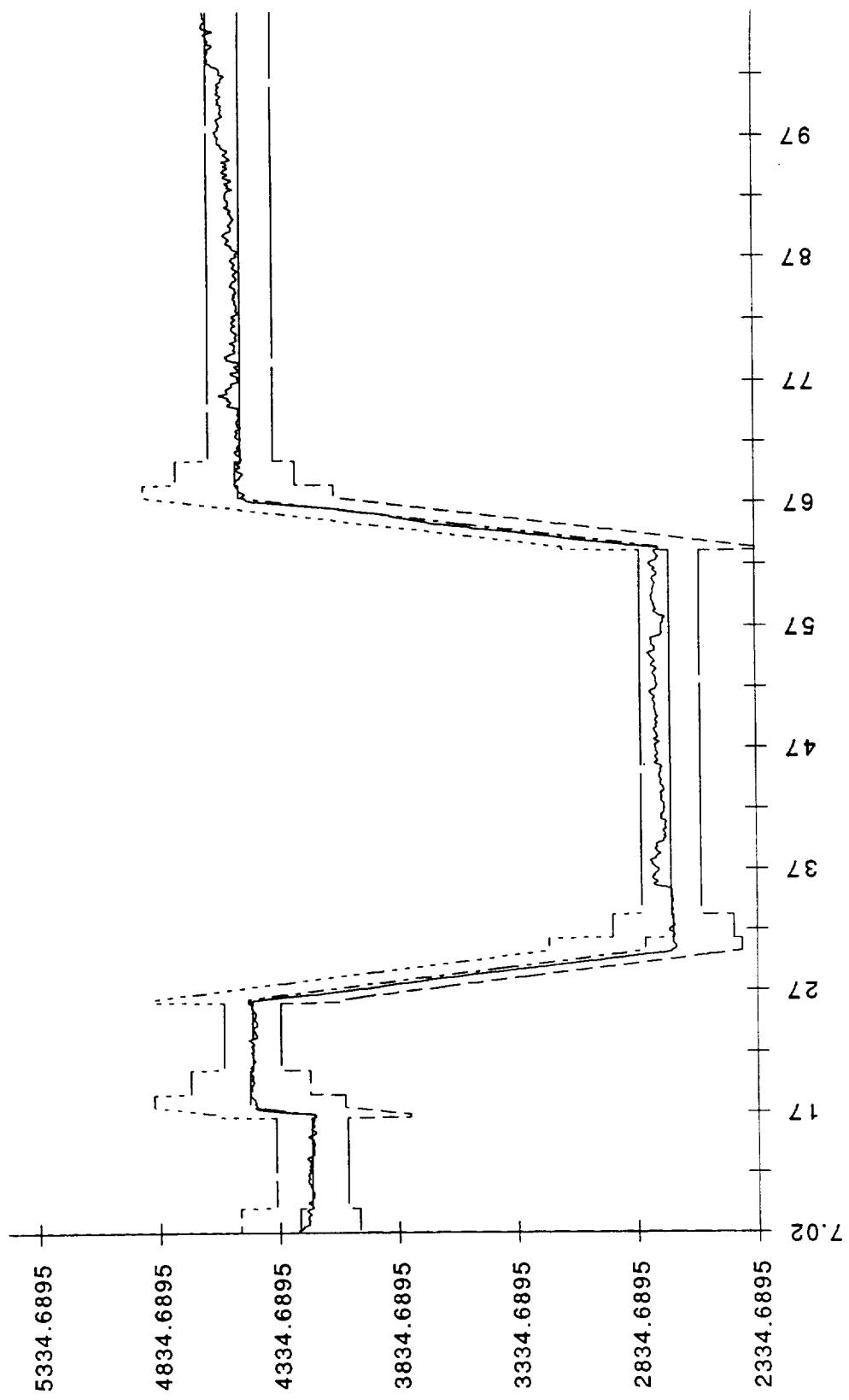
902-248 HPOP IMSL pr.T

902-248 HPOP IMSL pr.T



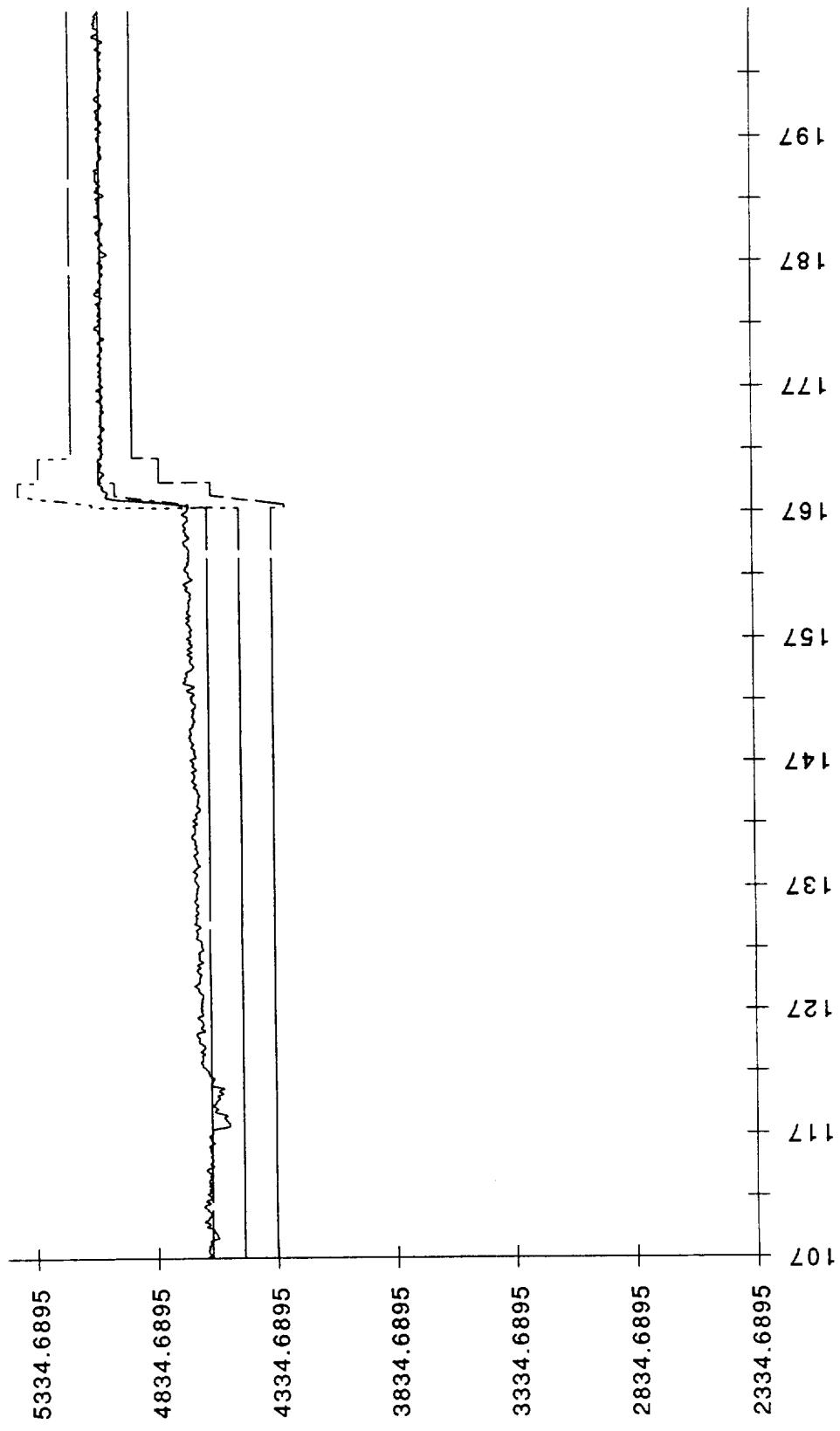
902-248 HPOP IMSL pr.T

902-587 HPFP bal cav pr.T



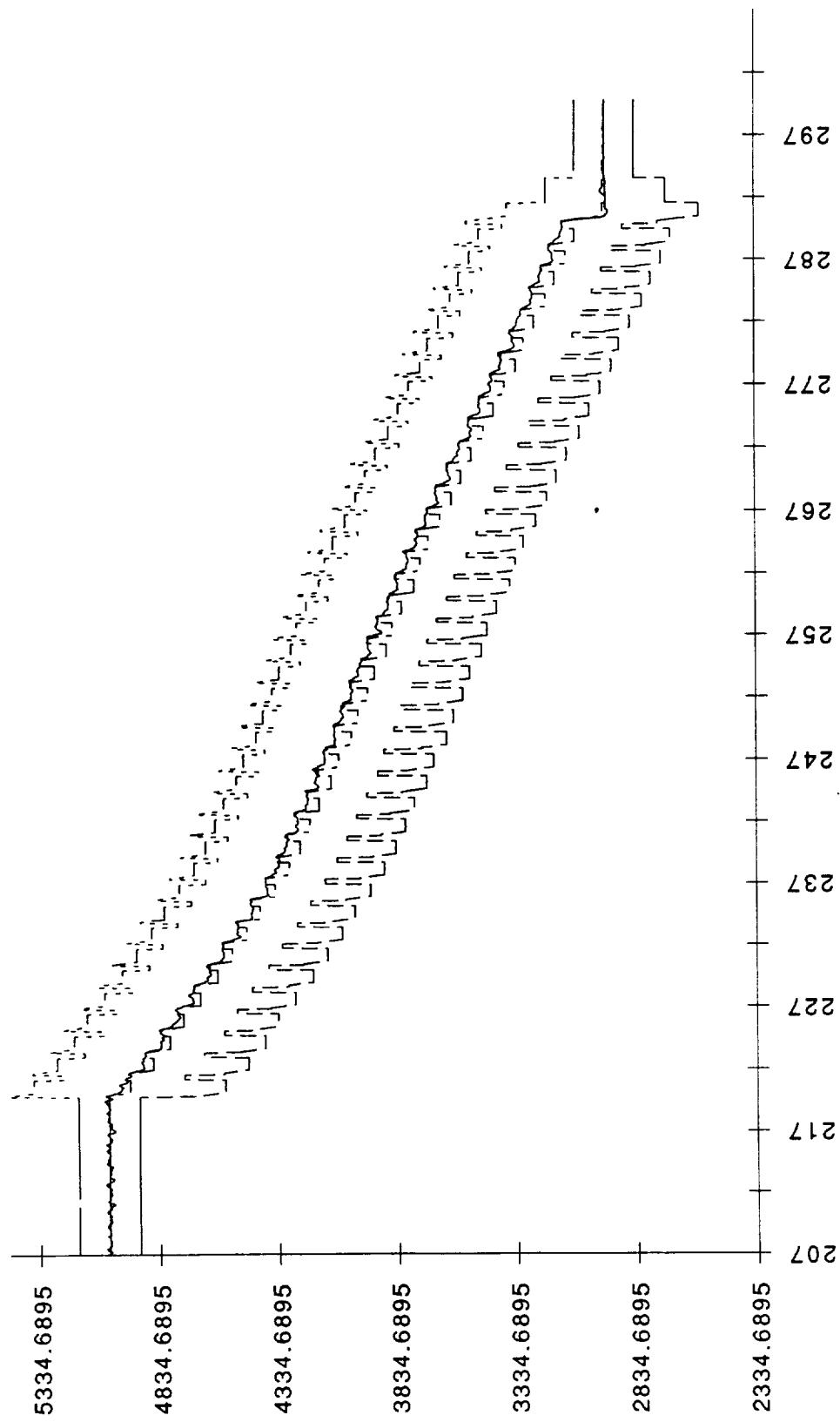
902-587 HPFP bal cav pr.T

902-587 HPFP bal cav pr.T



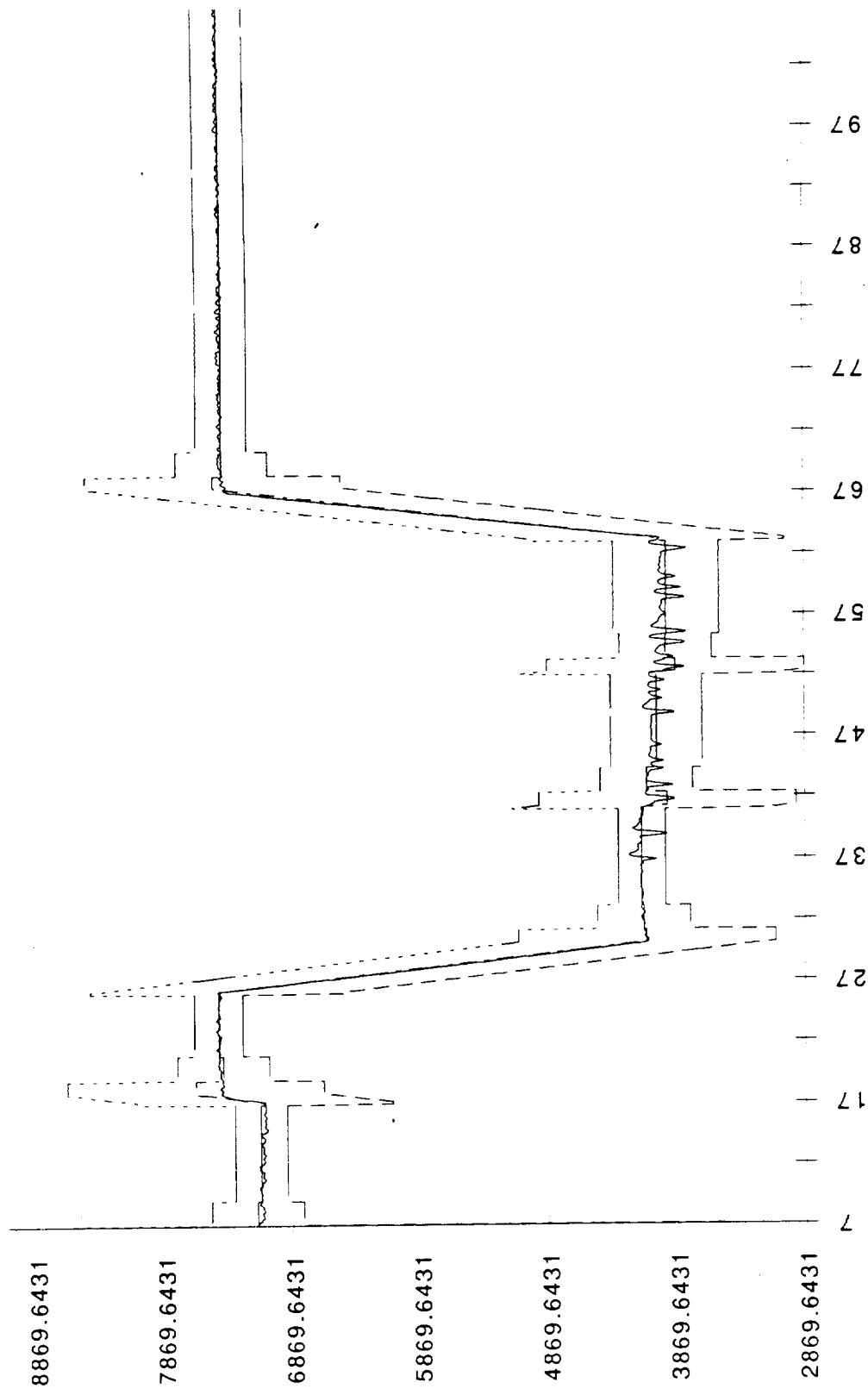
902-587 HPFP bal cav pr.T

902-587 HPFP bal cav pr.T

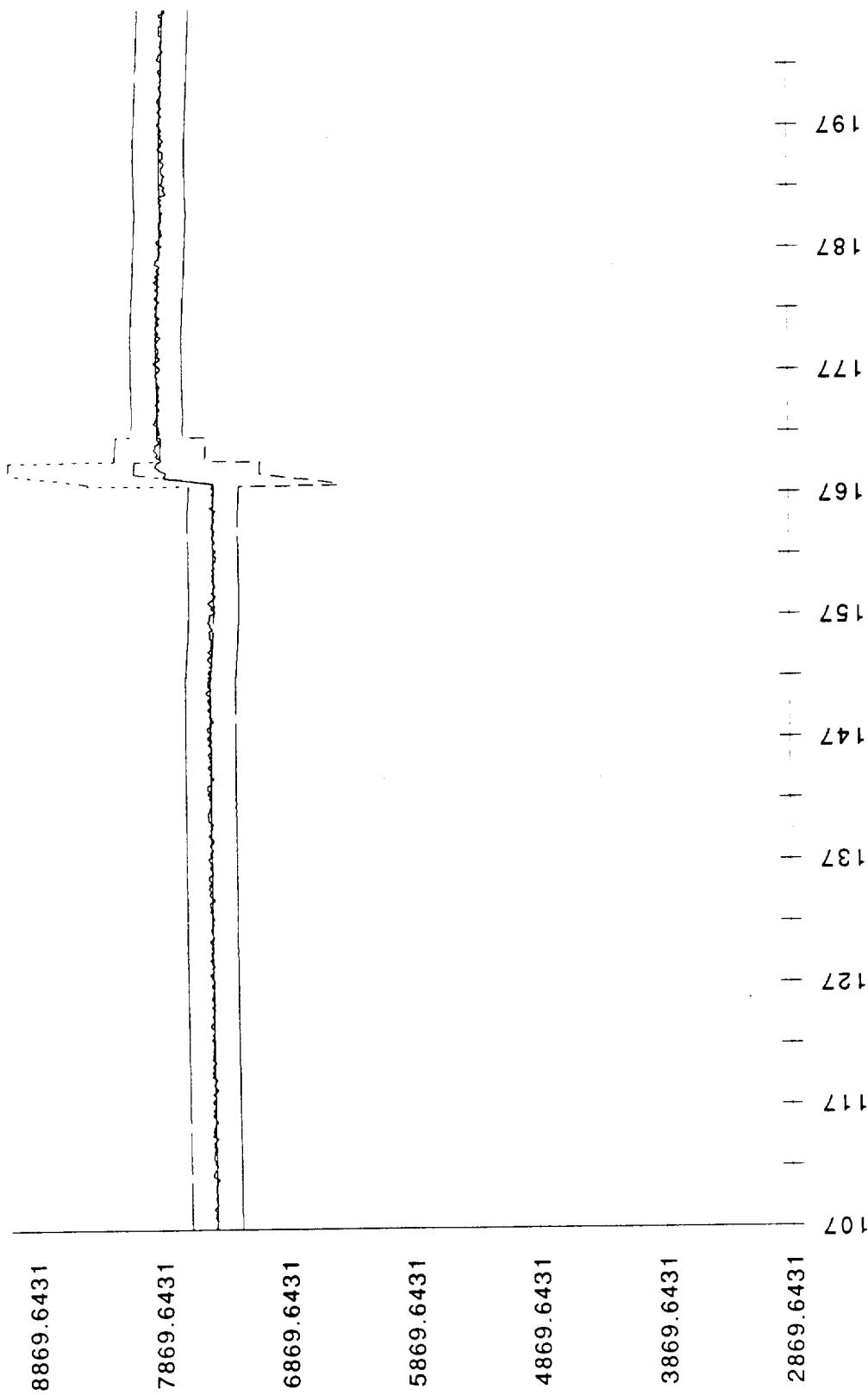


902-587 HPFP bal cav pr.T

902-596 HPOP PBP dis pr.T

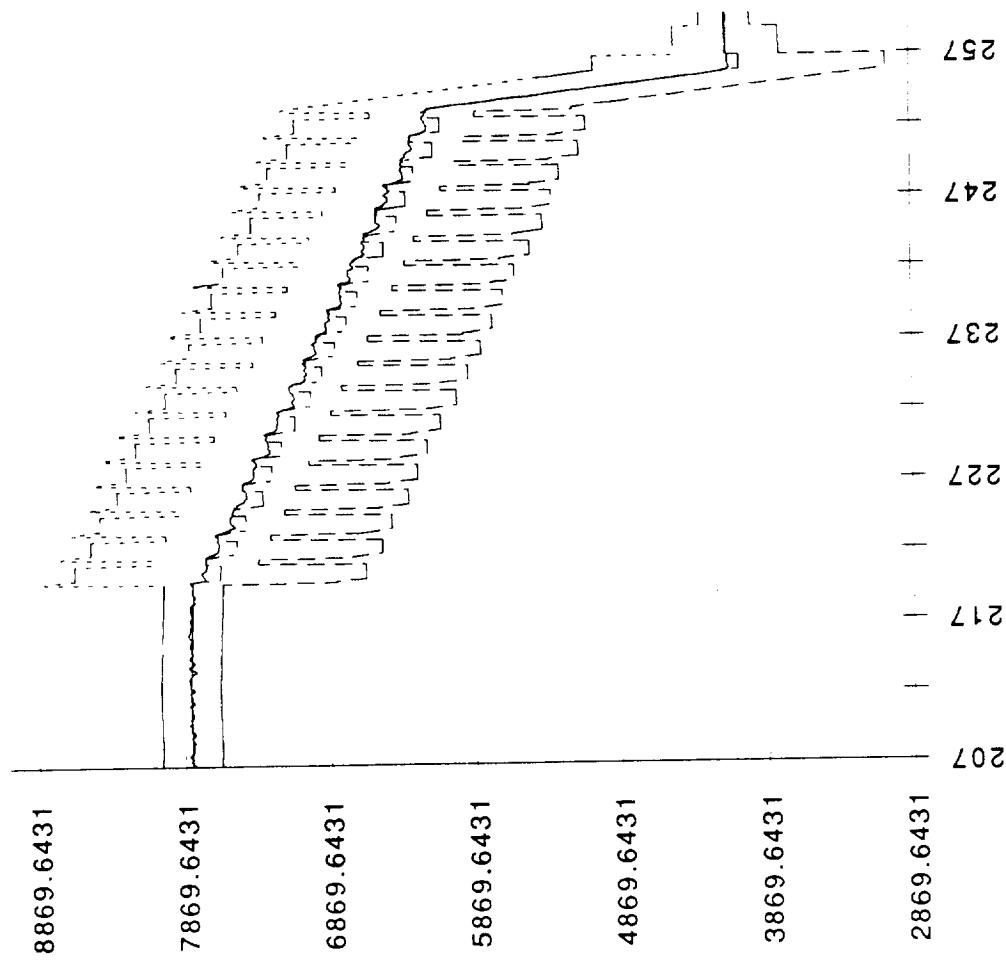


902-596 HPQP PBP dis pr.T



902-596 HPCP PBP dis pr.T

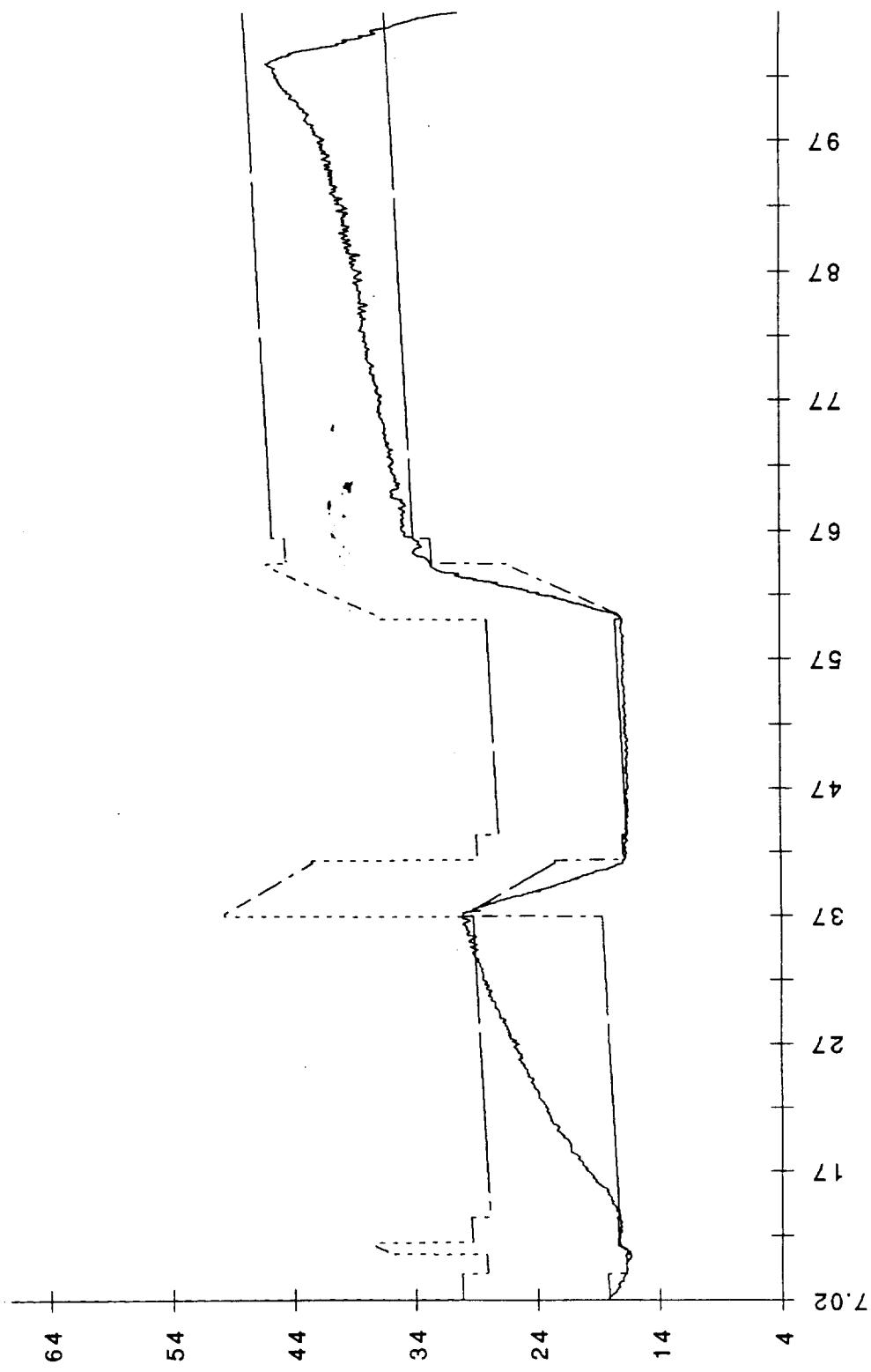
902-596 HPOP PBP dis pr.T



902-596 HPC~ PBP dis pr.T

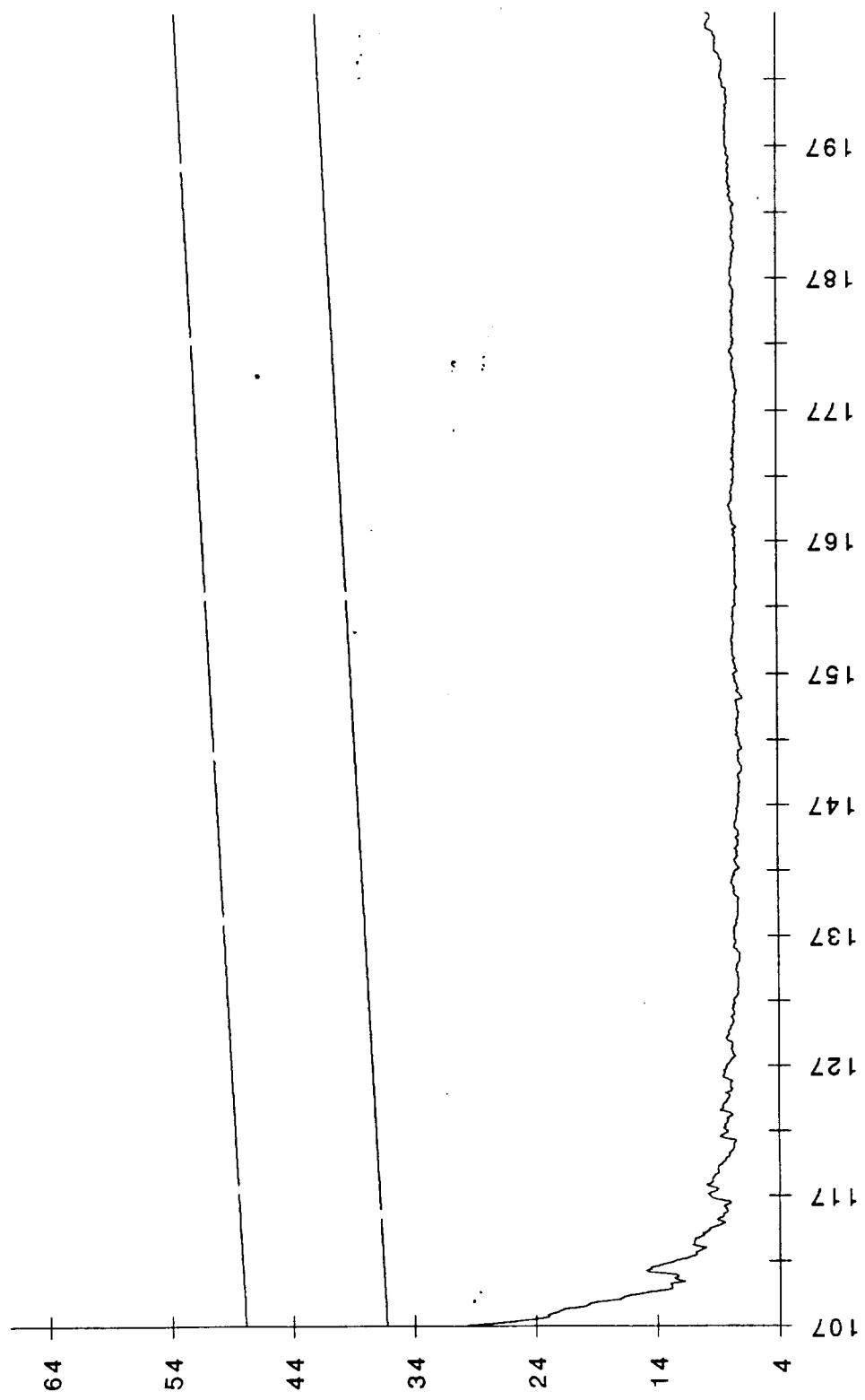
**Appendix C2
Good Test Plots
Pratt LOX Pump w/ Nominal CCV Schedule**

904-162 HPOP SSC pr.T



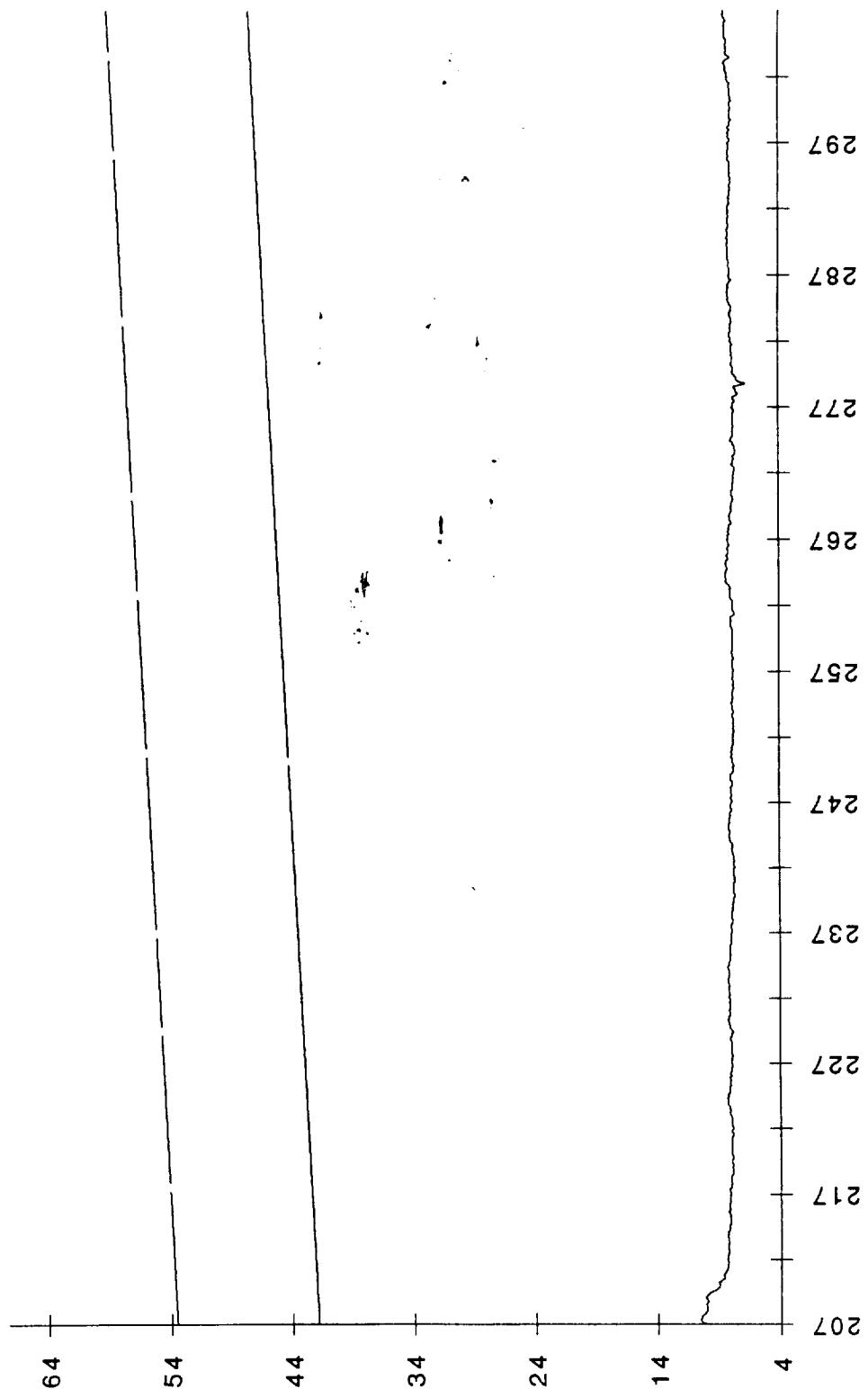
904-162 HPOP SSC pr.T

904-162 HPOP SSC pr.T



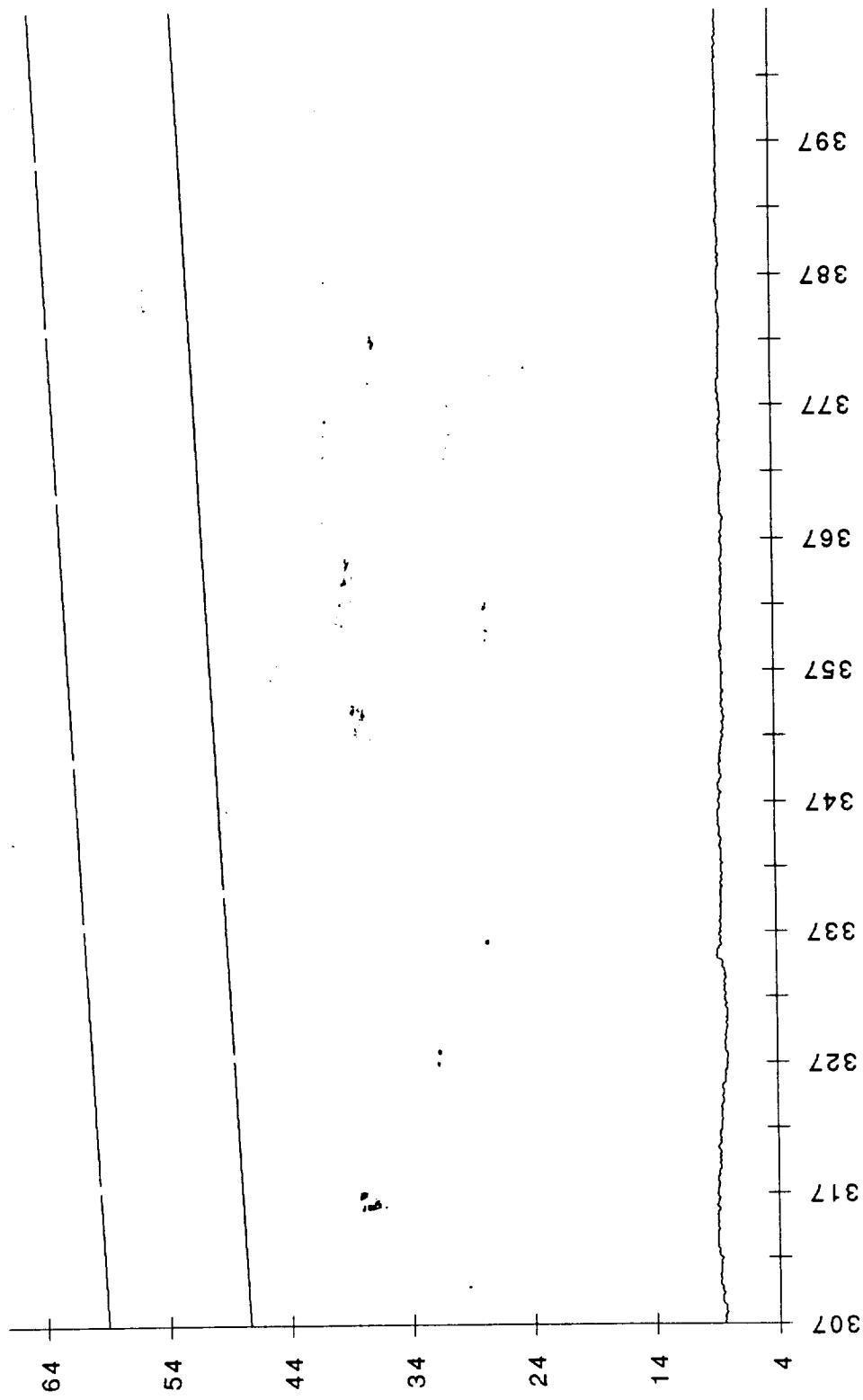
904-162 HPOP SSC pr.T

904-162 HPOP SSC pr.T



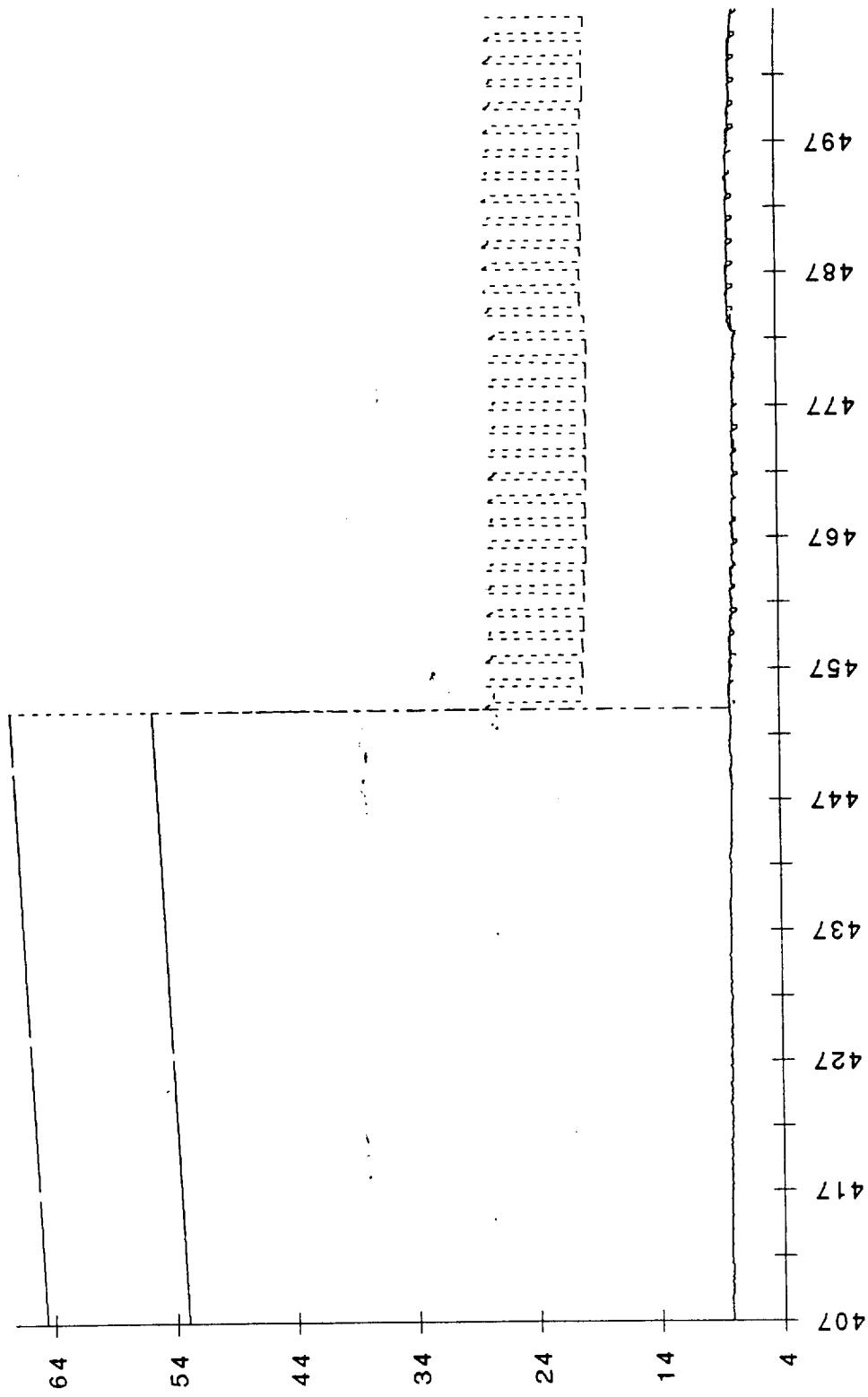
904-162 HPOP SSC pr.T

904-162 HPOP SSC pr.T



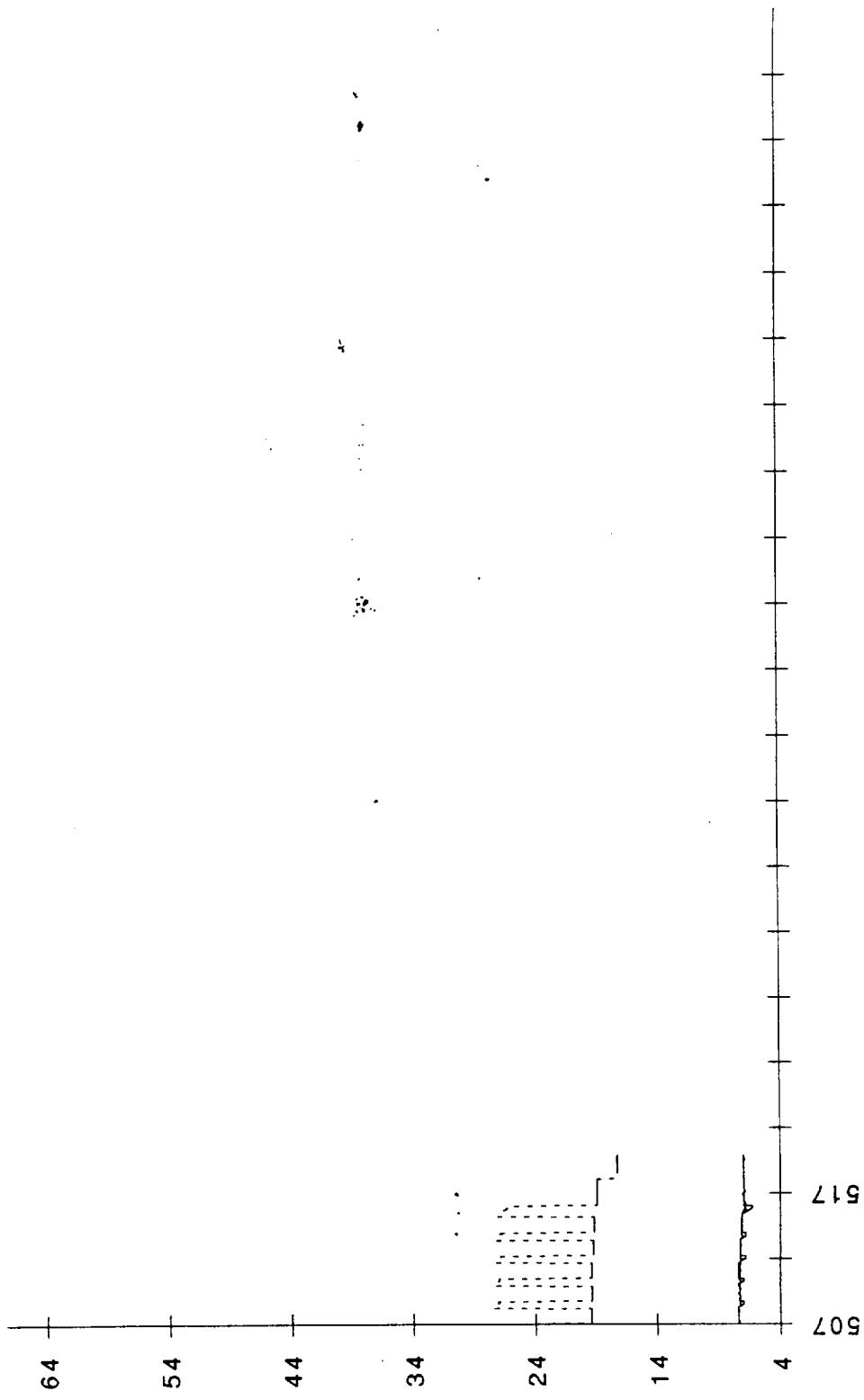
904-162 HPOP SSC pr.T

904-162 HPOP SSC pr.T



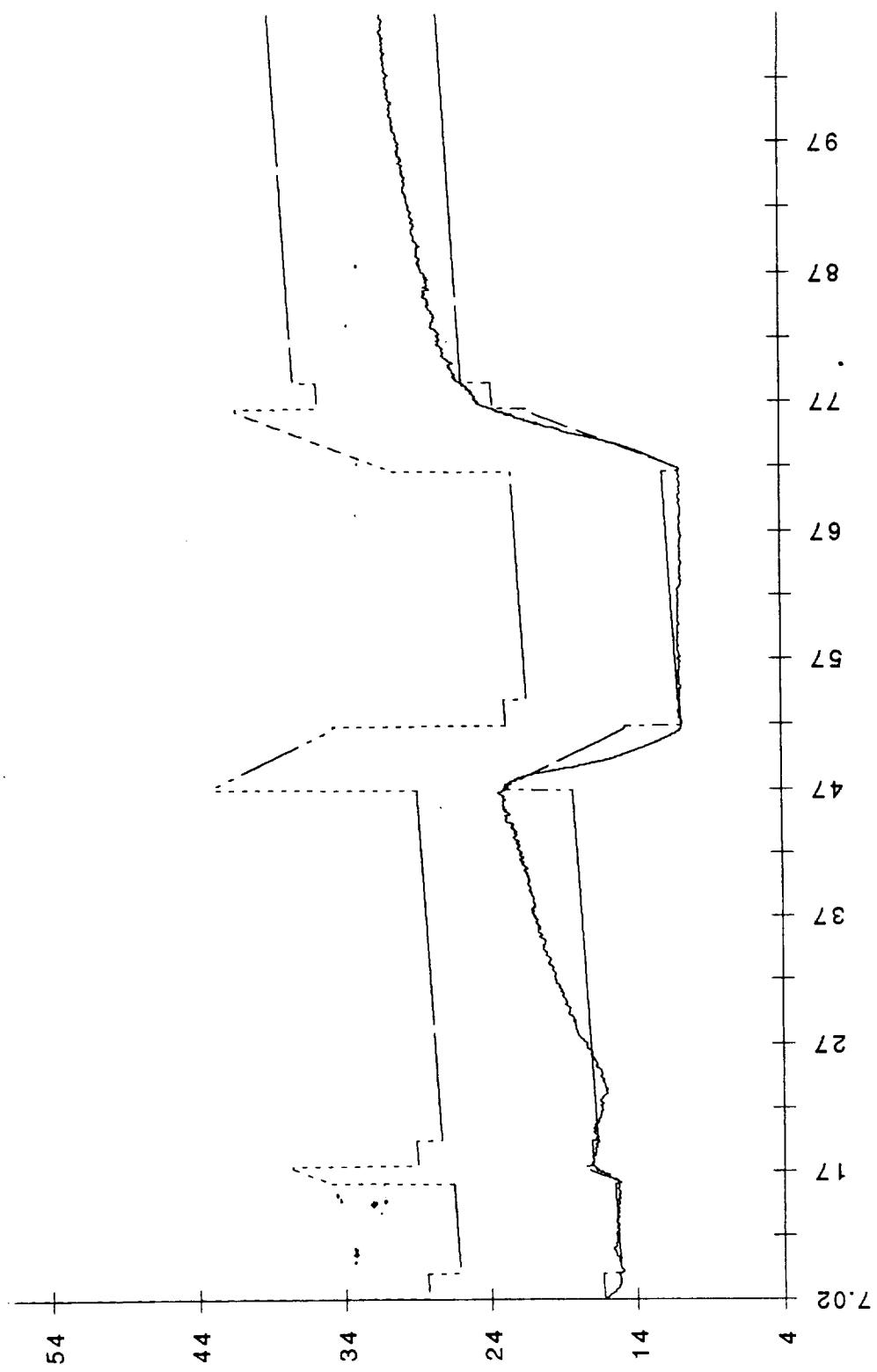
904-162 HPOP SSC pr.T

904-162 HPOP SSC pr.T



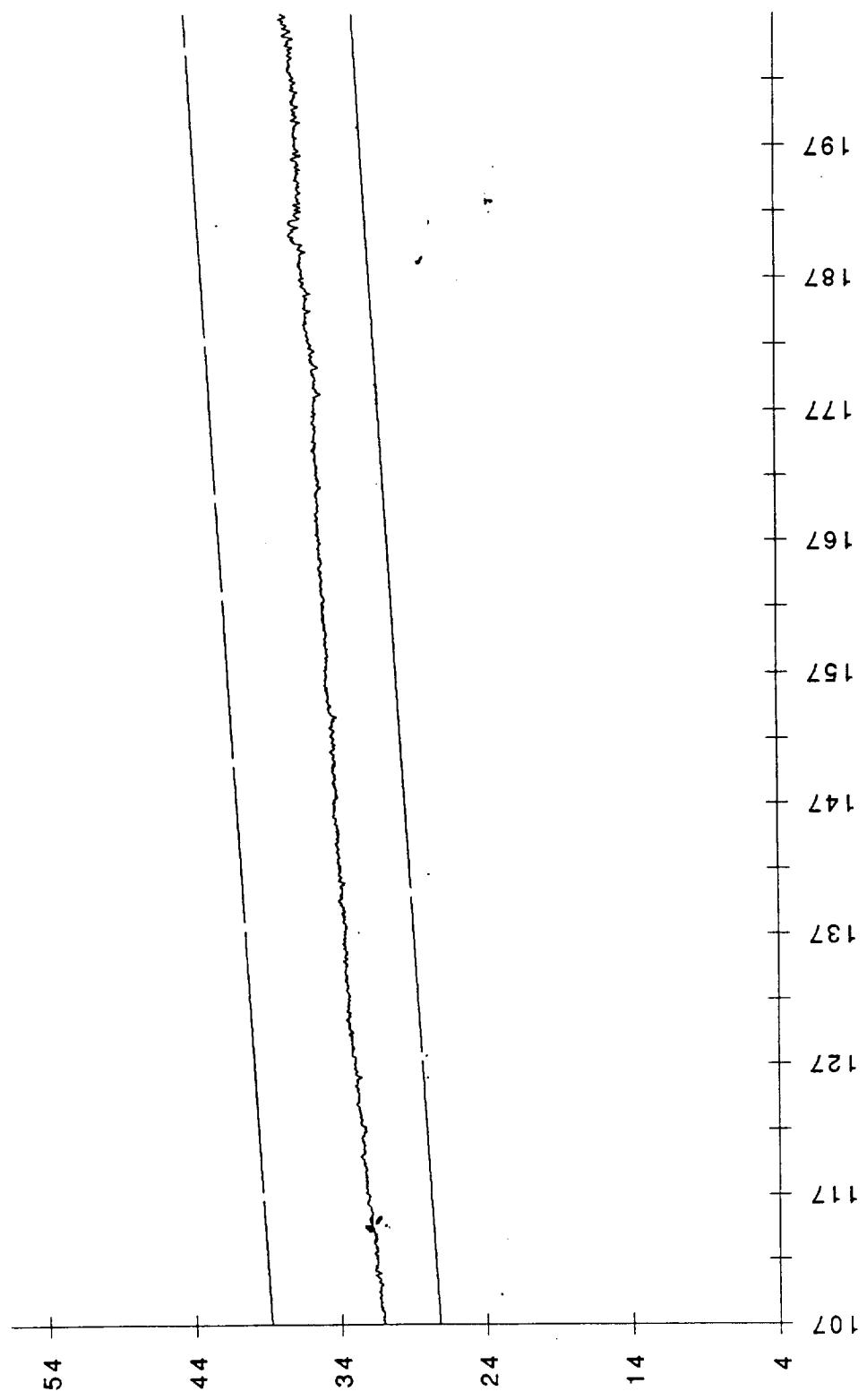
904-162 HPOP SSC pr.T

904-165 HPOP SSC pr.T



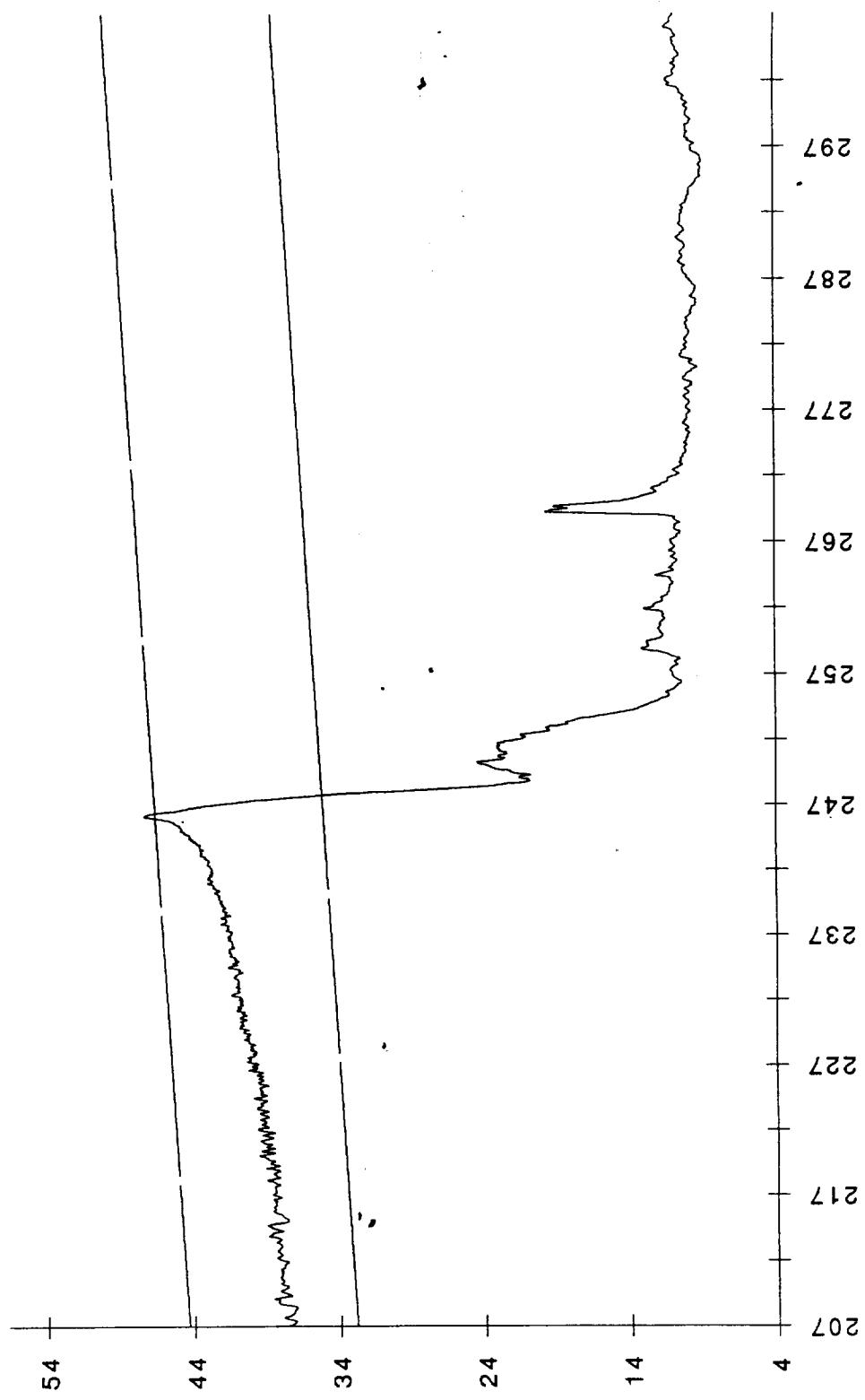
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904-165 HPOP SSC pr.T



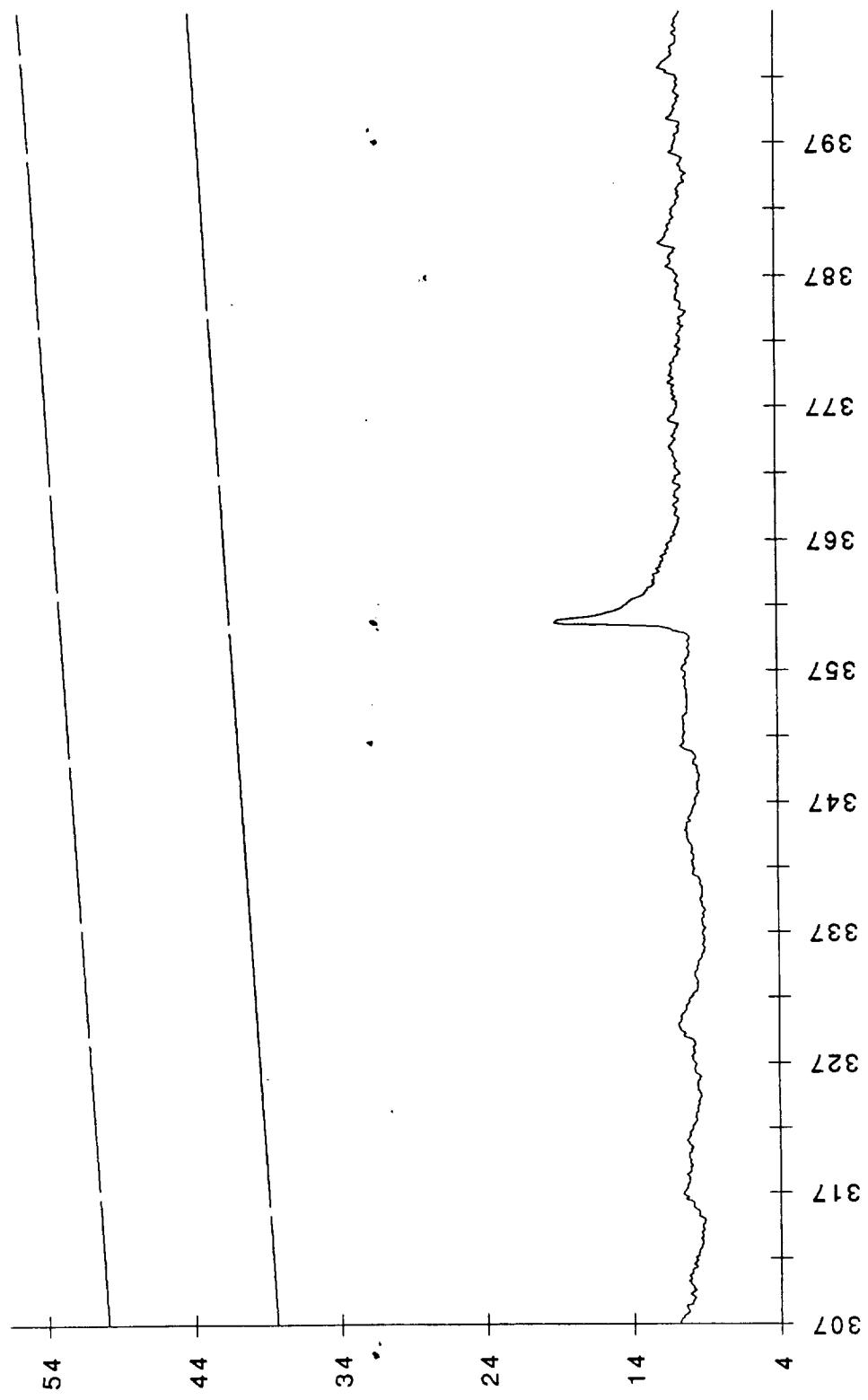
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904-165 HPOP SSC pr.T



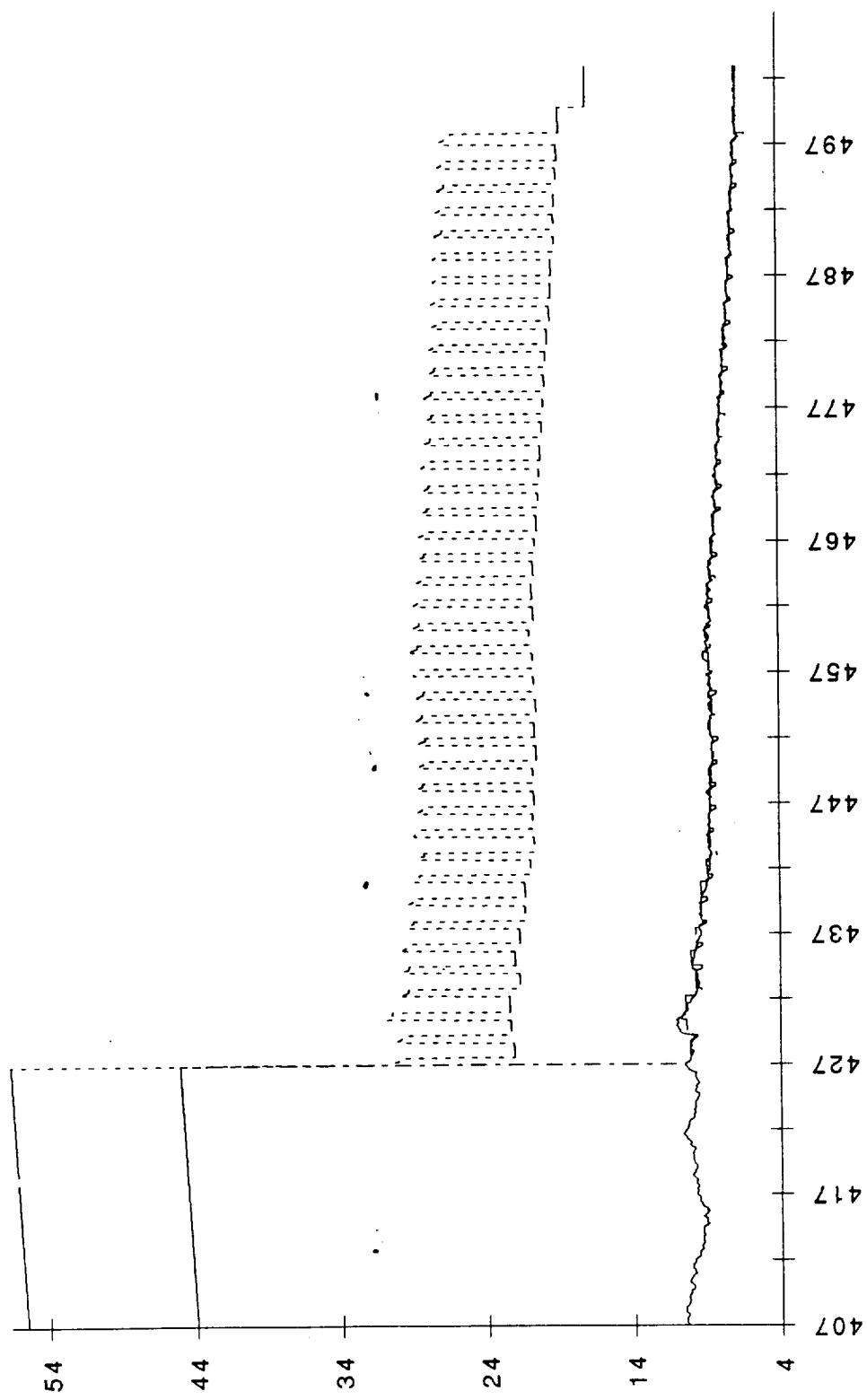
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904-165 HPOP SSC pr.T



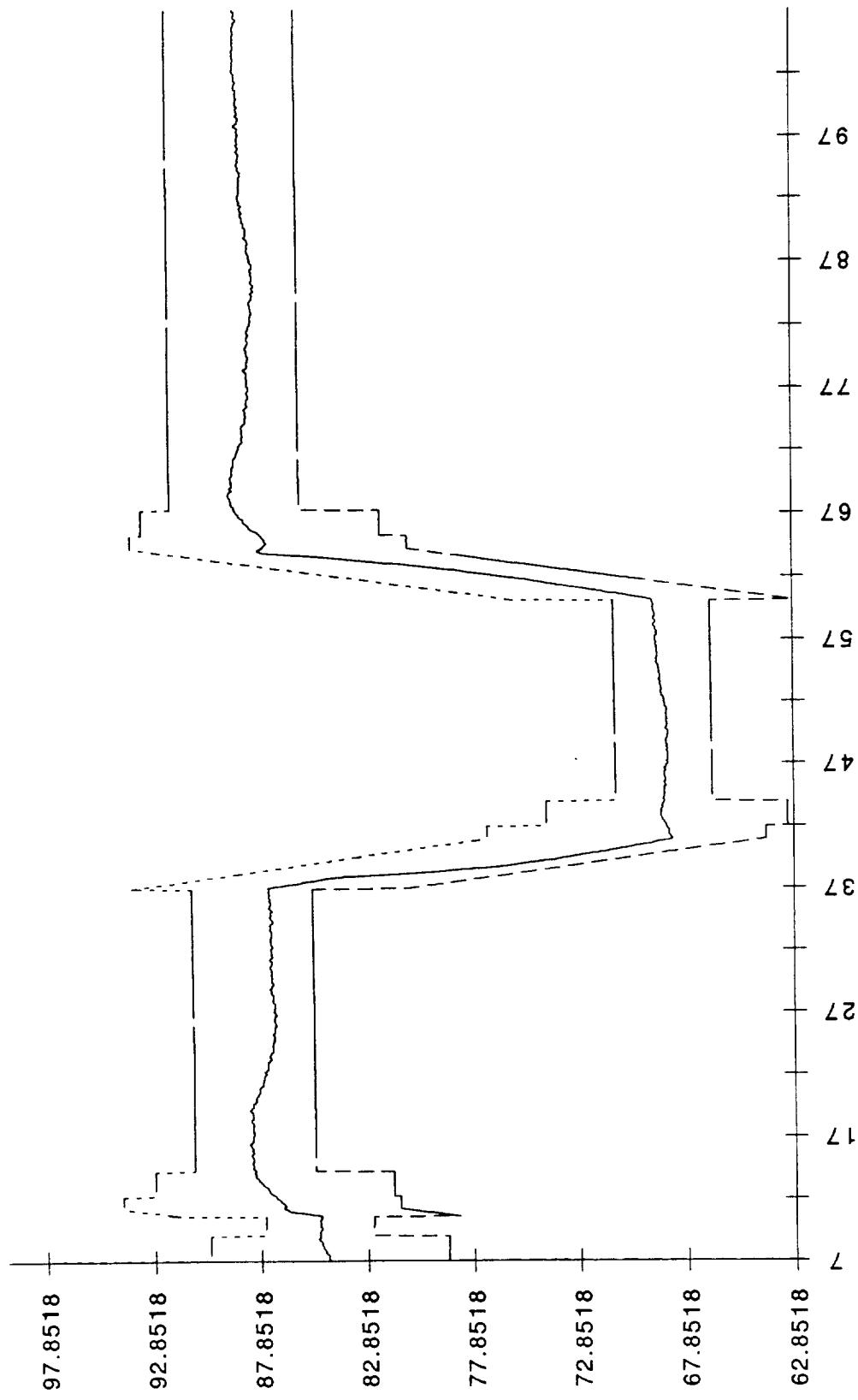
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904-165 HPOP SSC pr.T



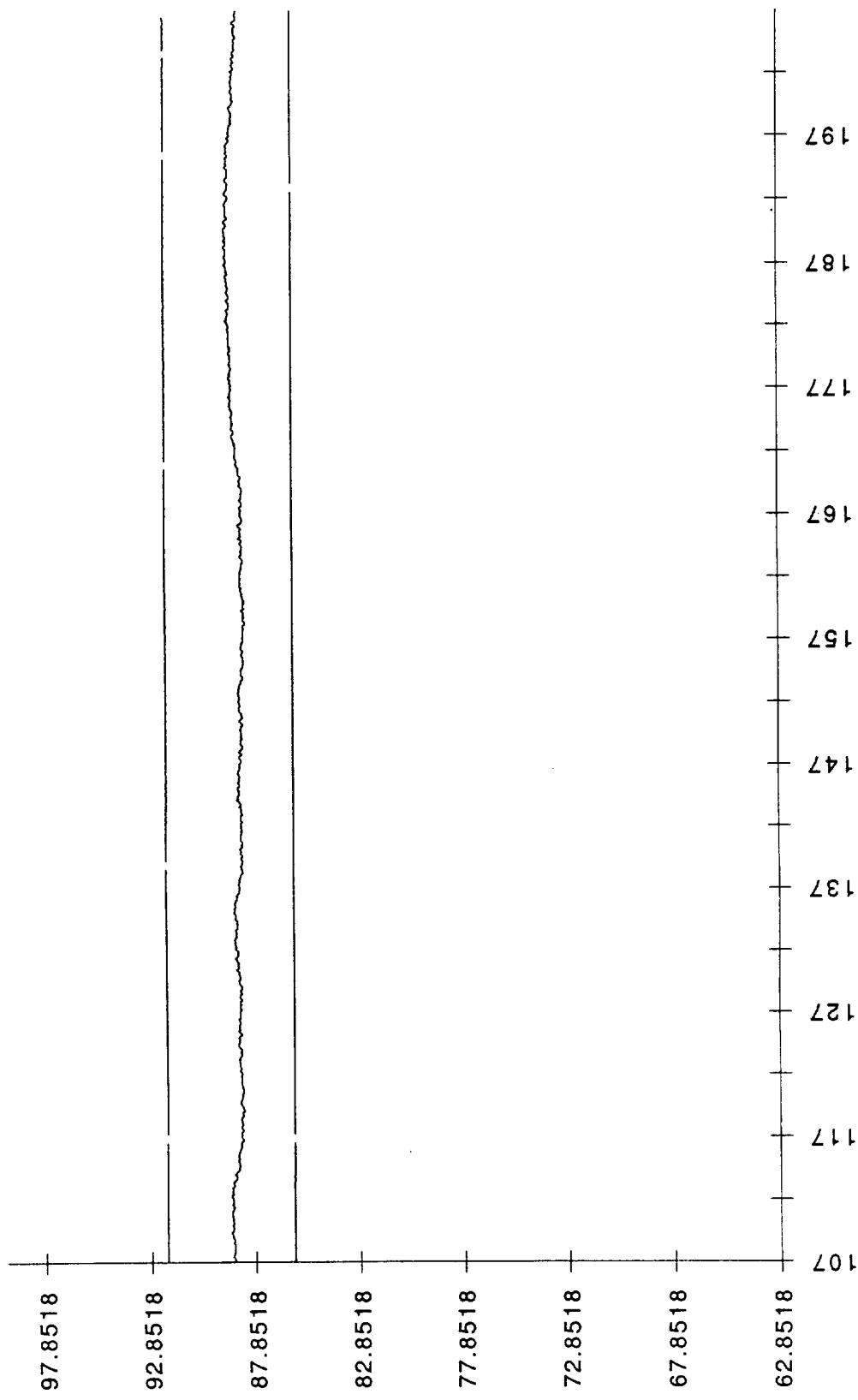
904-165 HPOP SSC pr.T

904-171 FPOV pos.T



904-171 FPOV pos.T

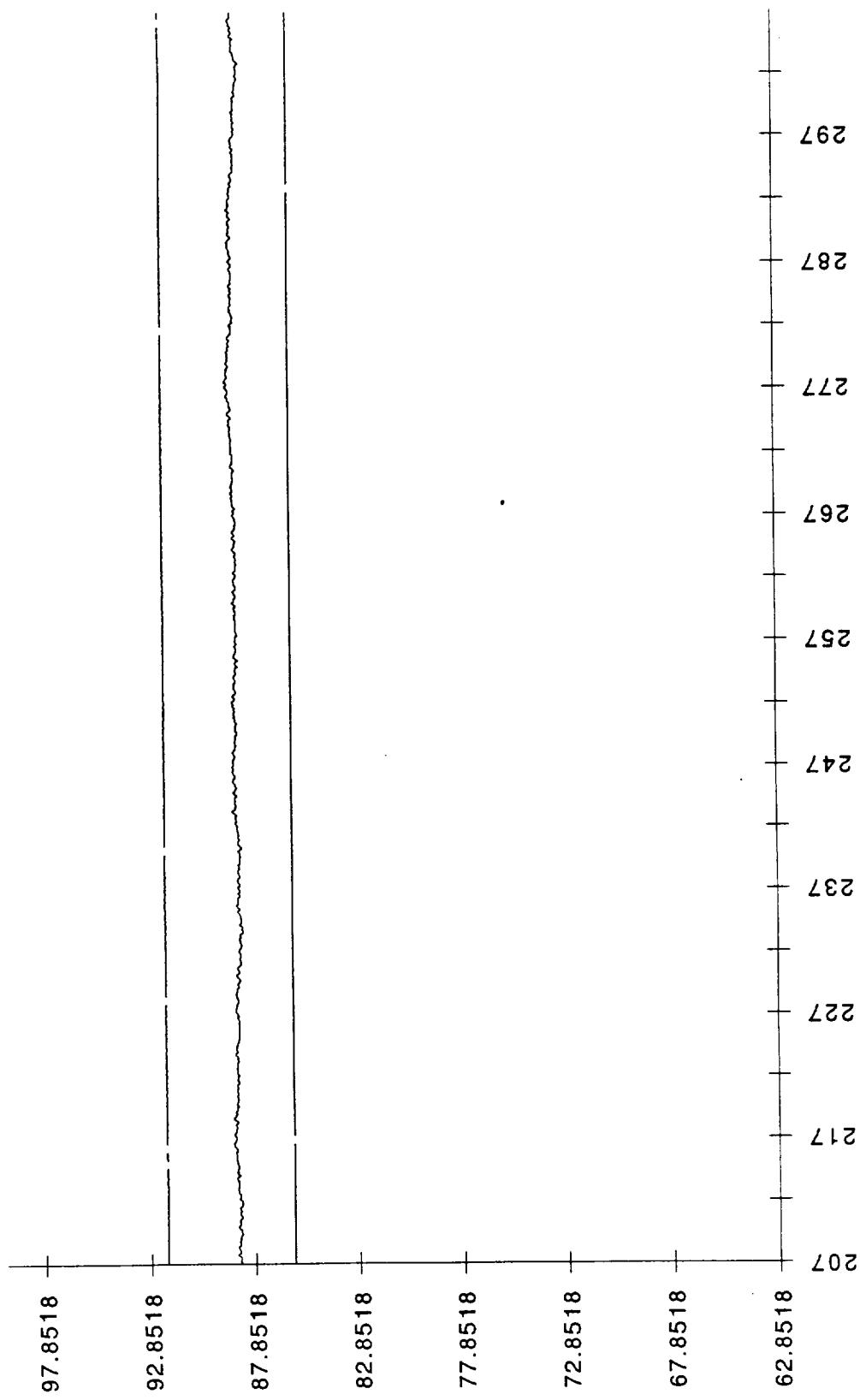
904-171 FPOV pos.T



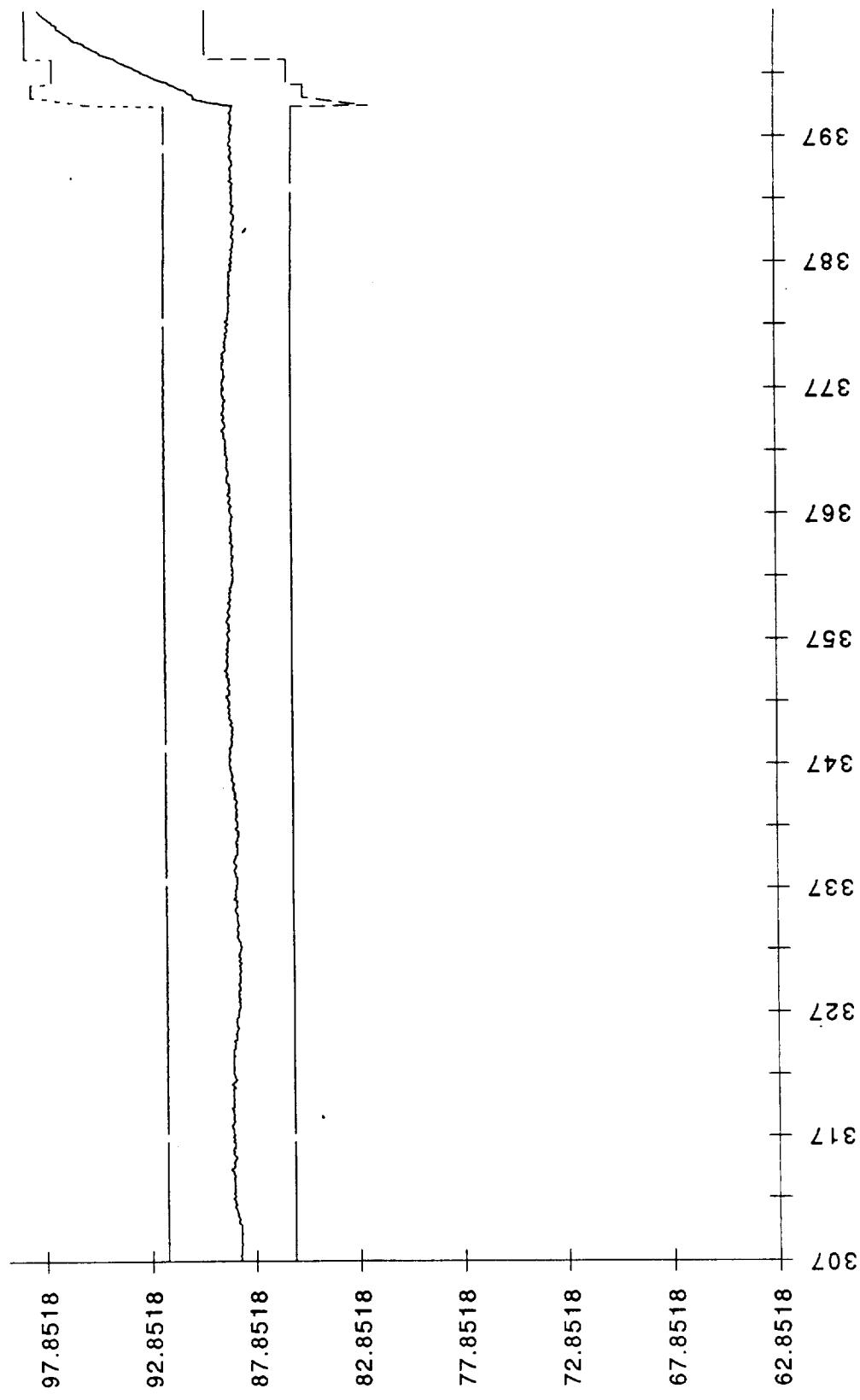
904-171 FPOV pos.T

904-171 FPOV pos.T

904-171 FPOV pos.T

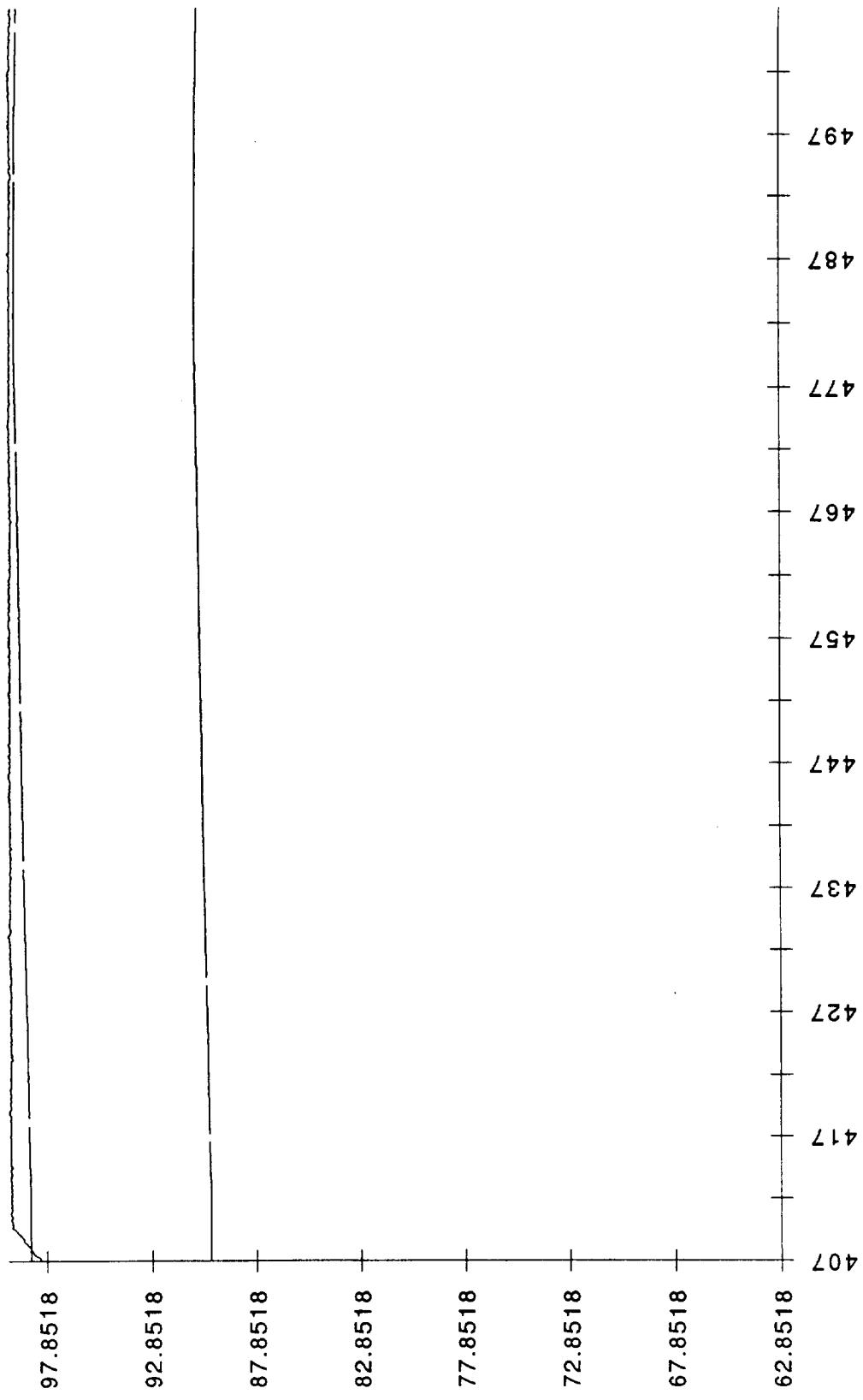


904-171 FPOV pos.T



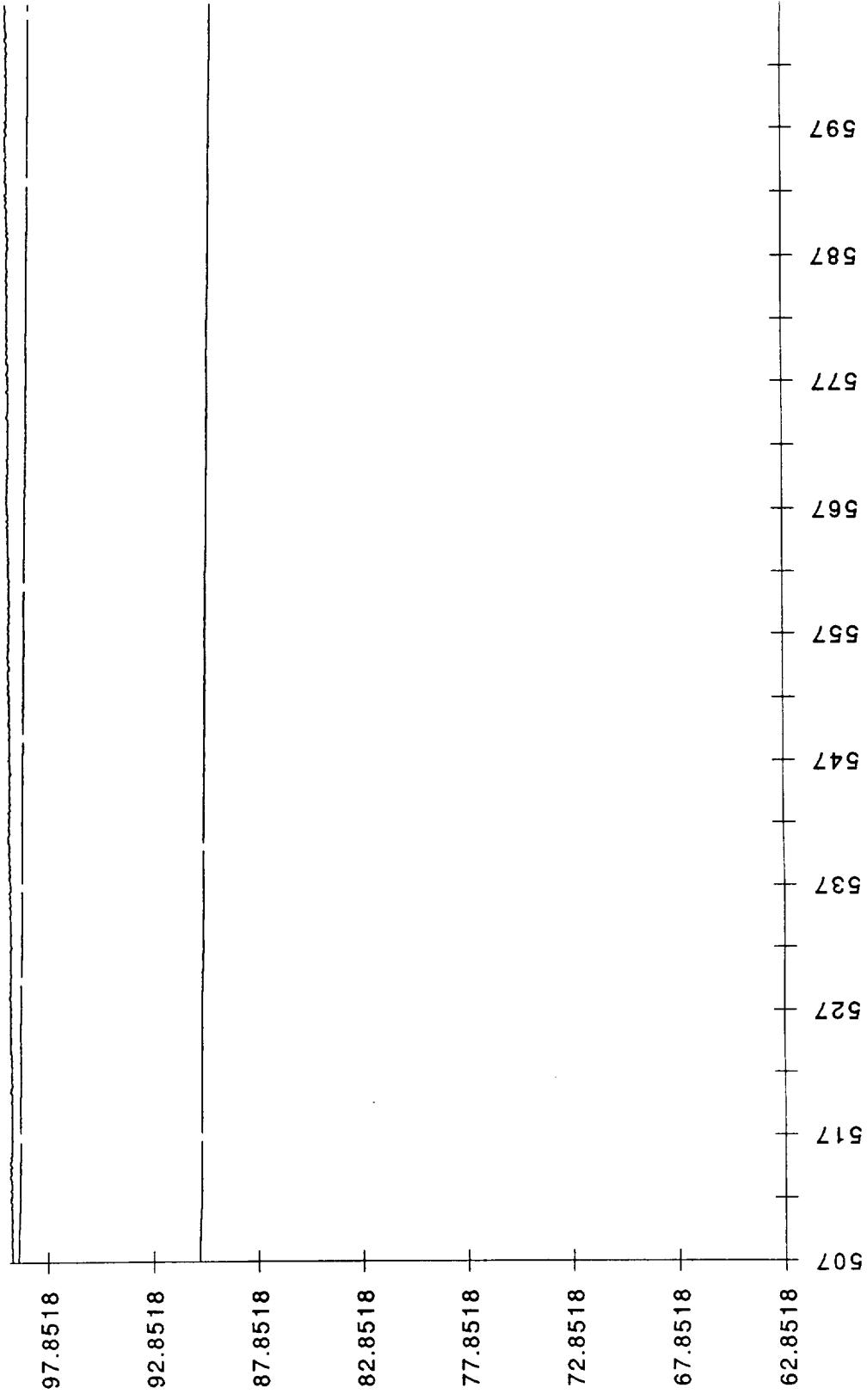
904-171 FPOV pos.T

904-171 FPOV pos.T



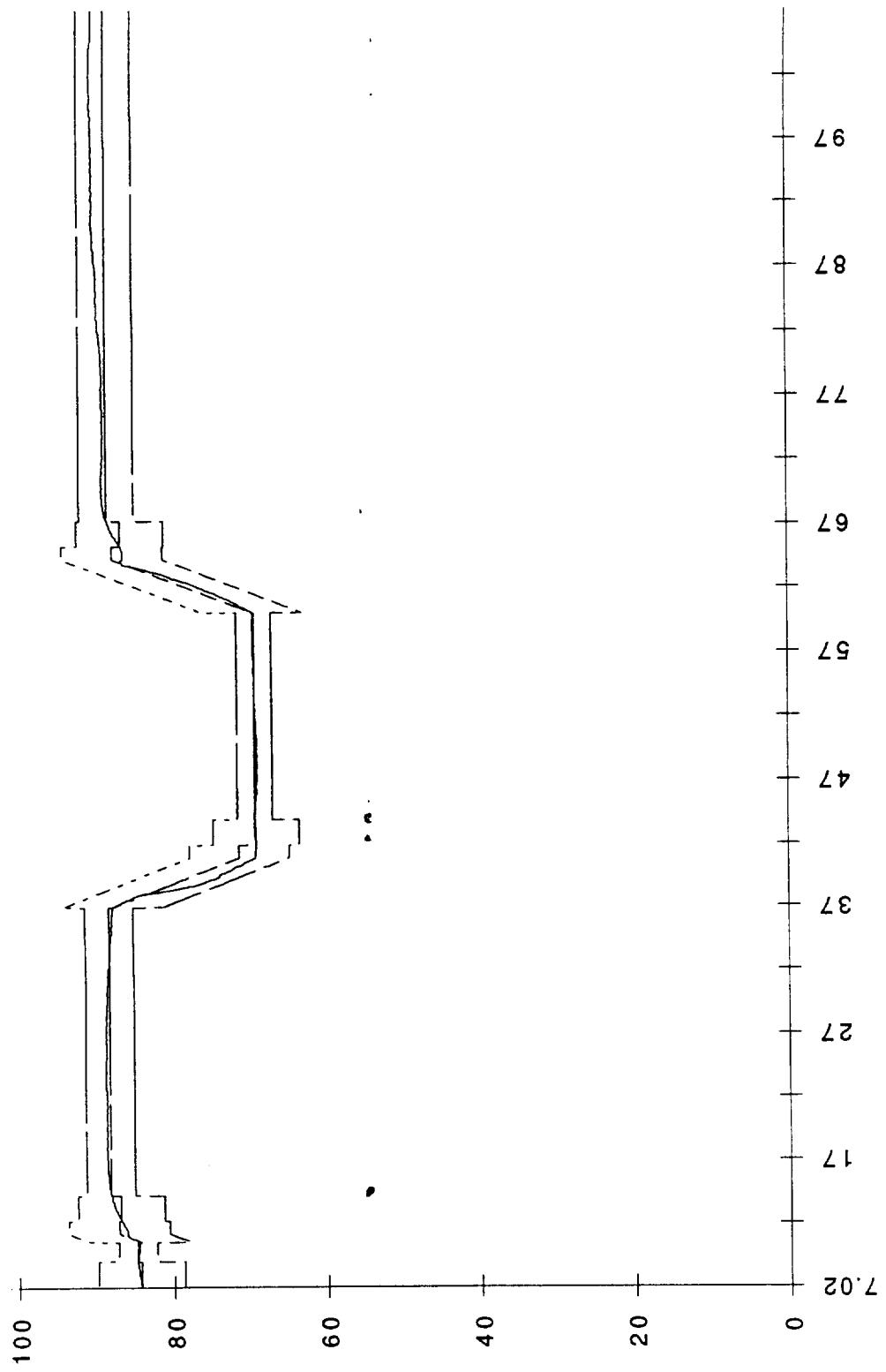
904-171 FPOV pos.T

904-171 FPOV pos.T



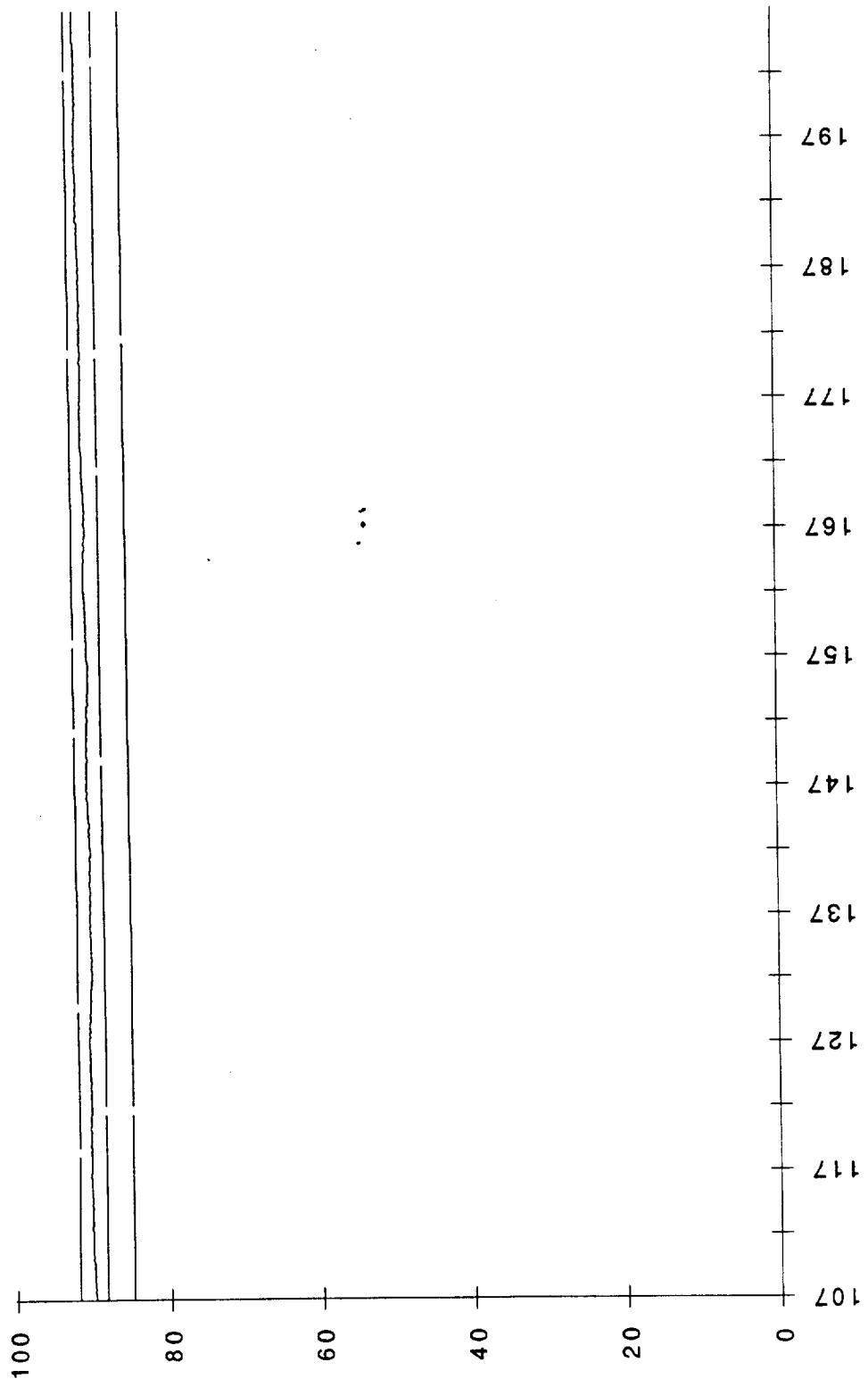
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904-172 FPOV pos.T



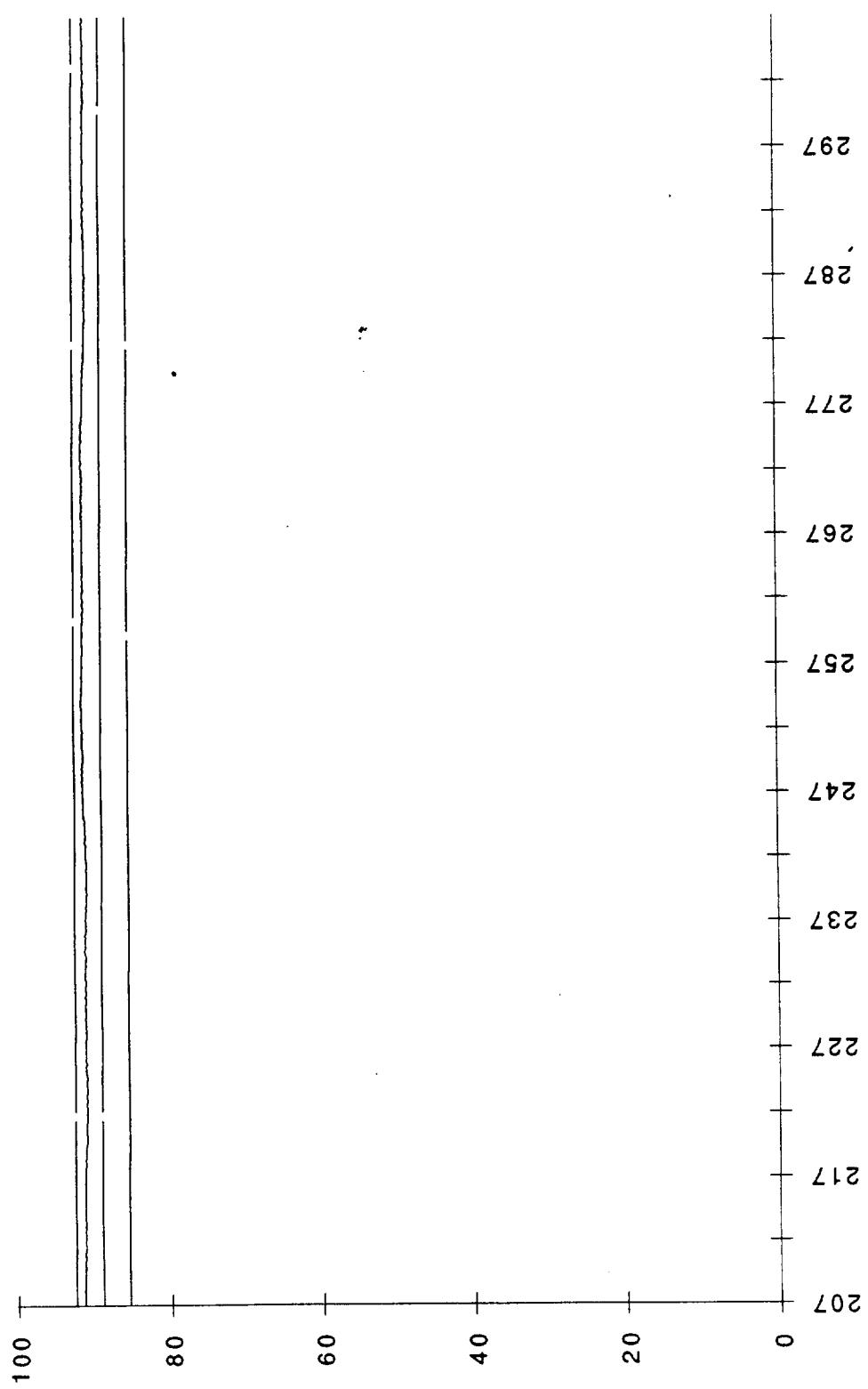
904-172 FPOV pos.T

904-172 FPOV pos.T



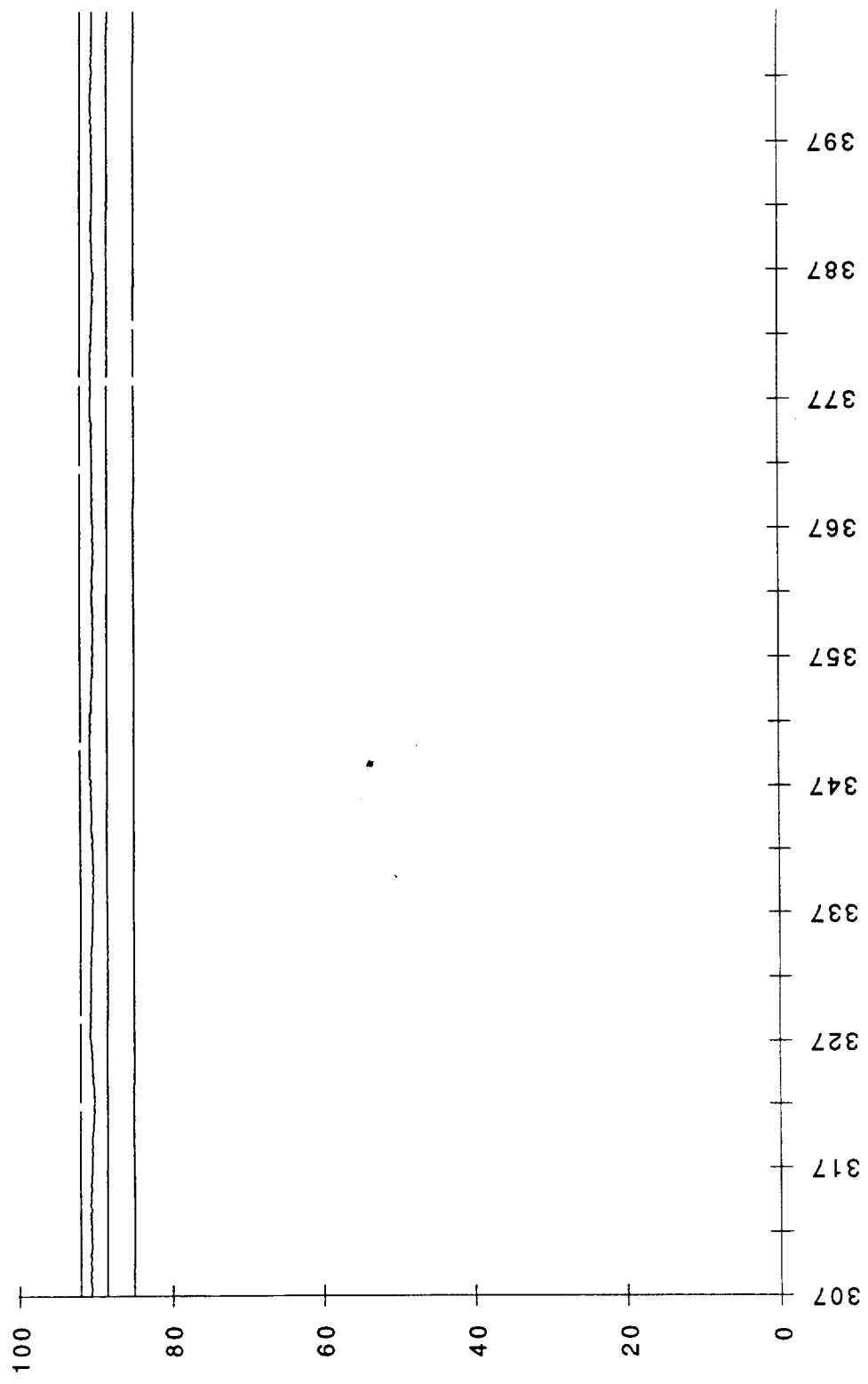
904-172 FPOV pos.T

904-172 FPOV pos.T



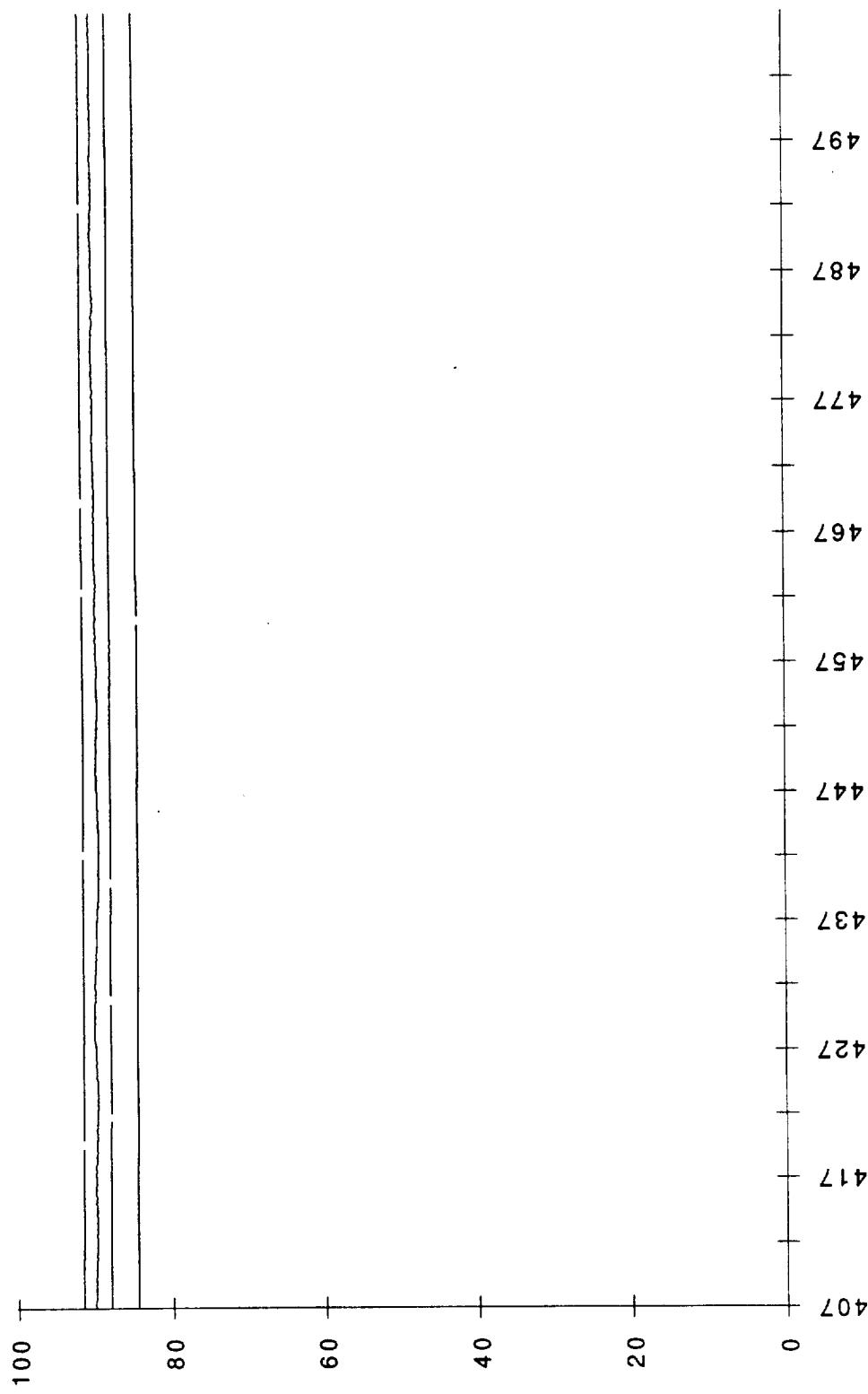
904-172 FPOV pos.T

904-172 FPOV pos.T



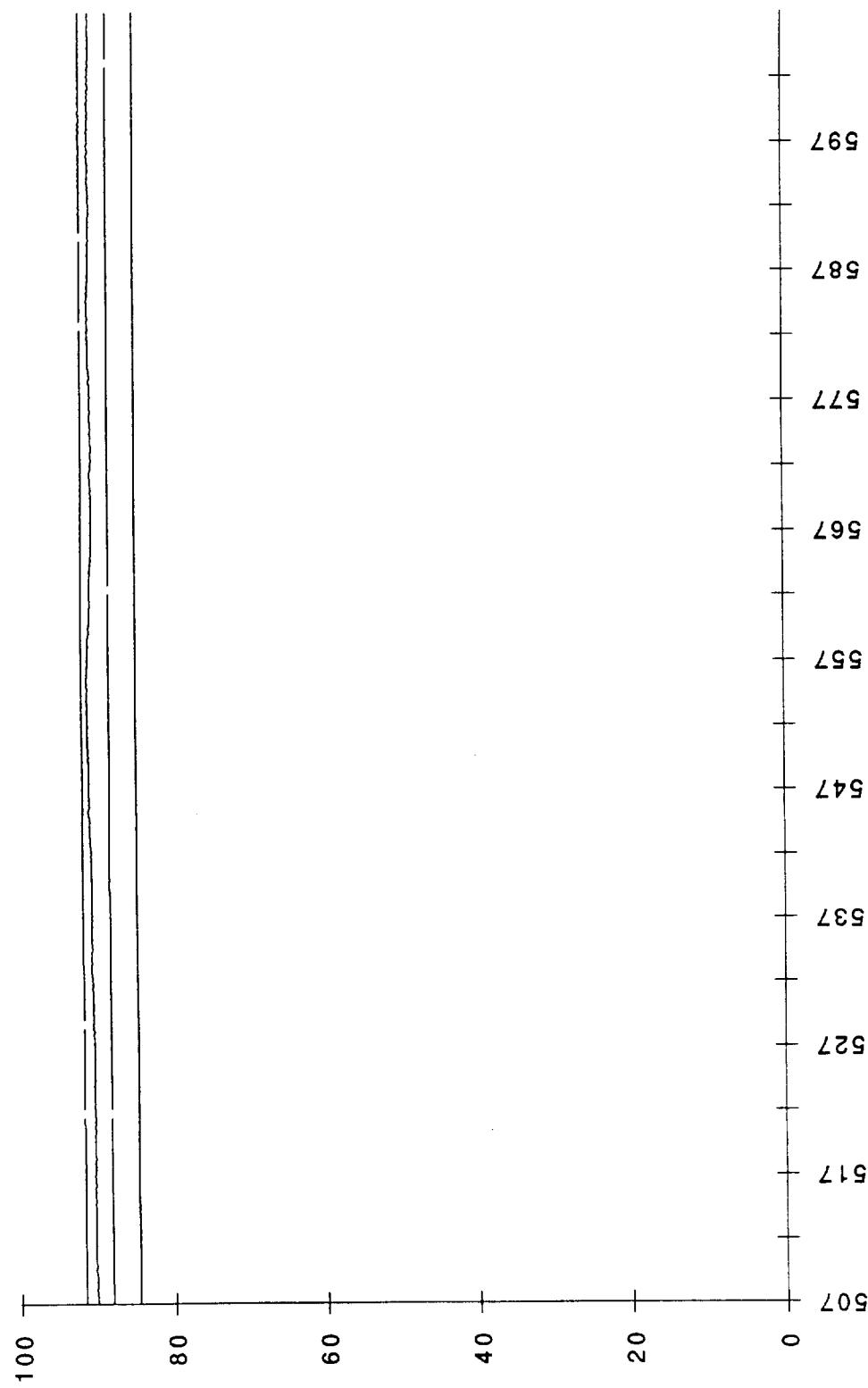
904-172 FPOV pos.T

904-172 FPOV pos.T



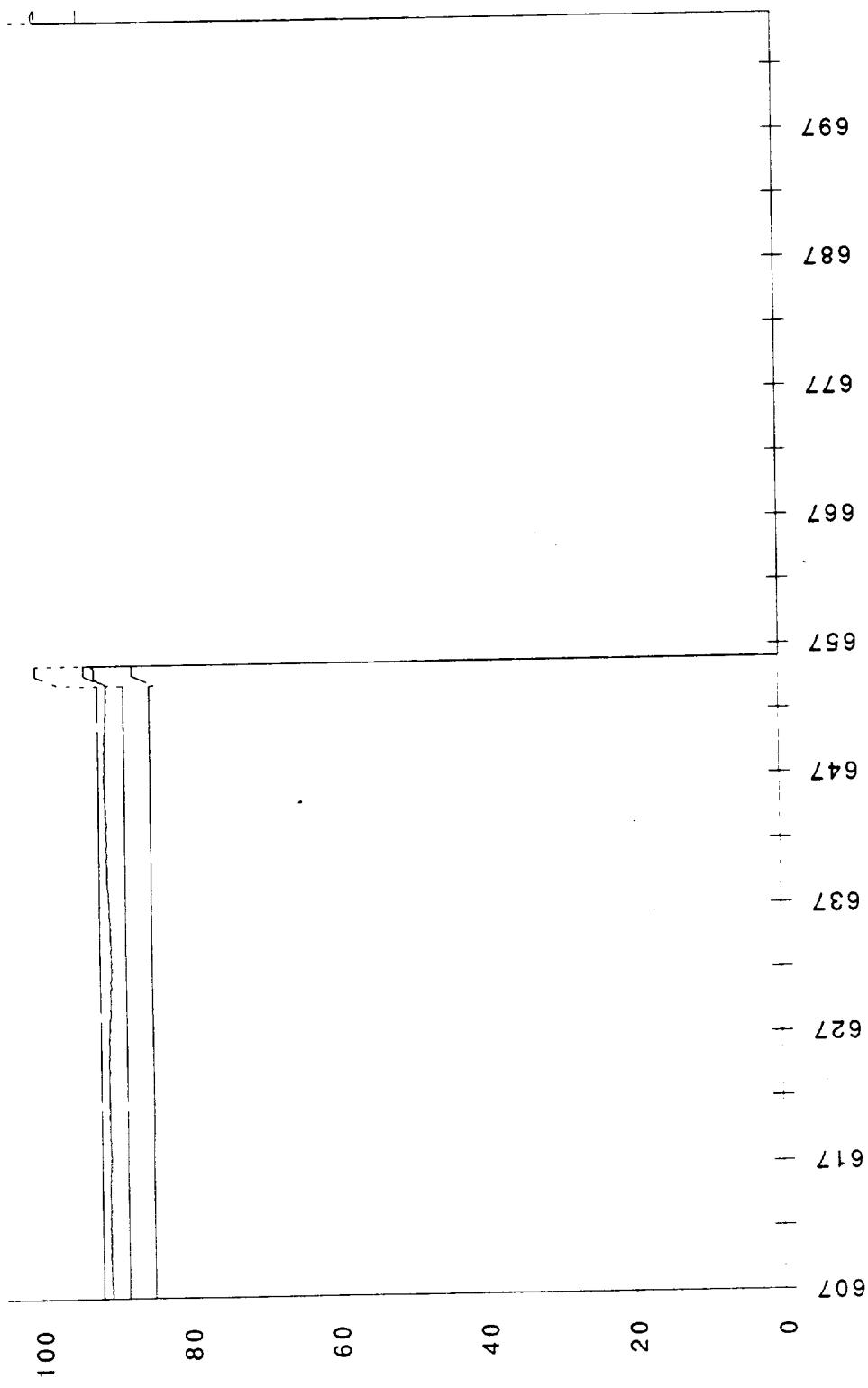
904-172 FPOV pos.T

904-172 FPOV pos.T



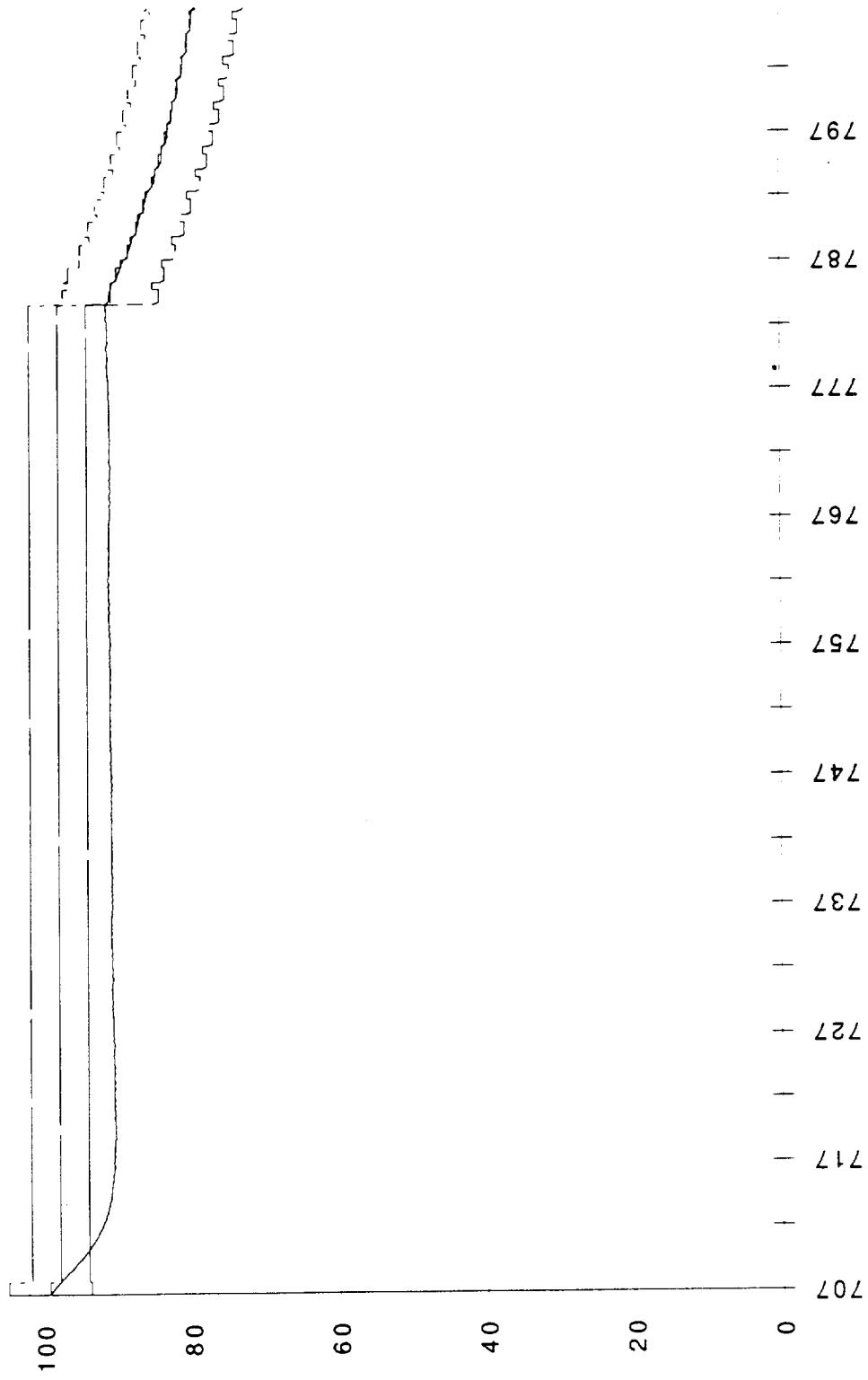
904-172 FPOV pos.T

904-172 FPOV pos .T



904-172 FPOV pos .T

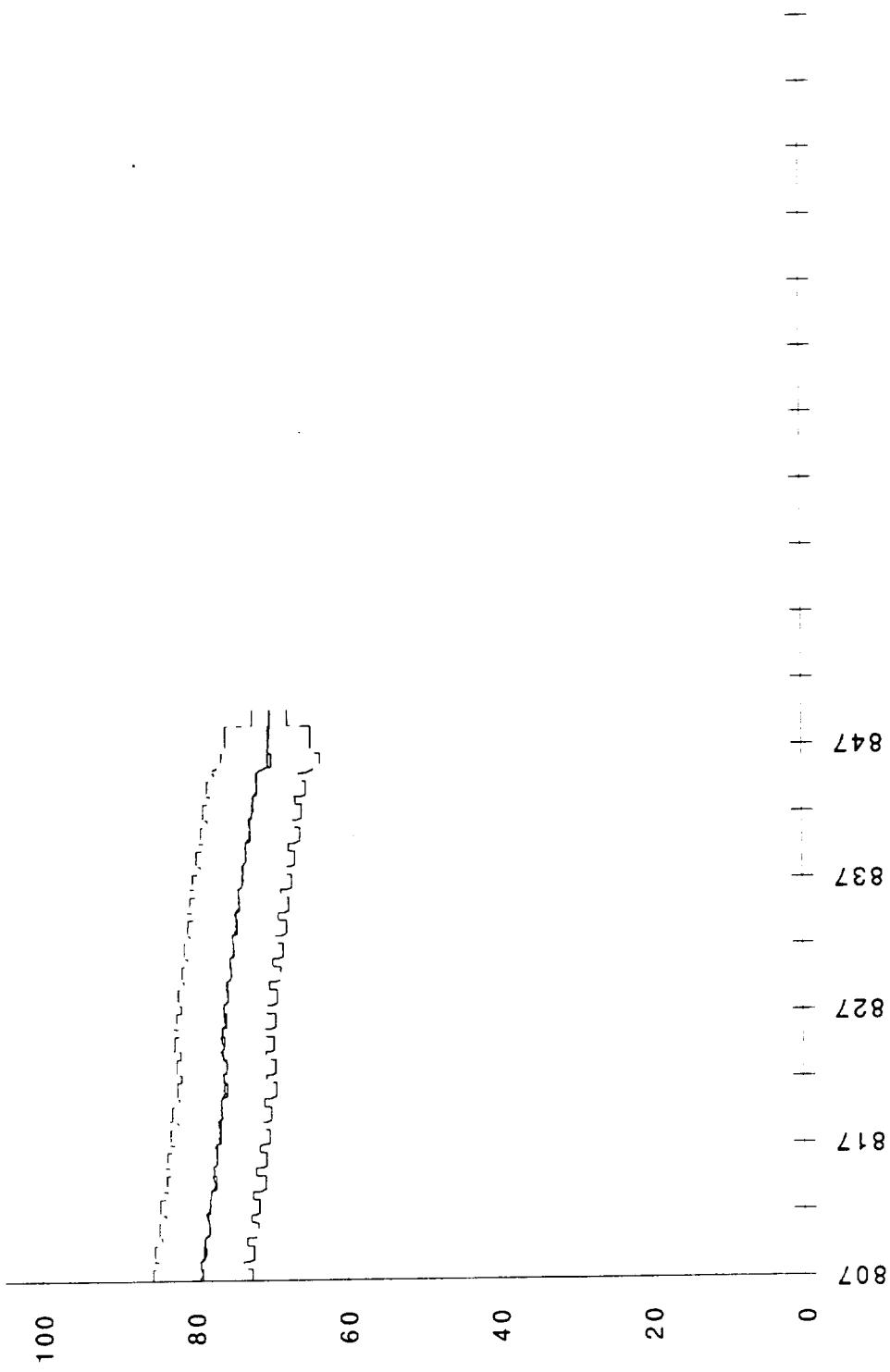
904-172 FPOV pos .T



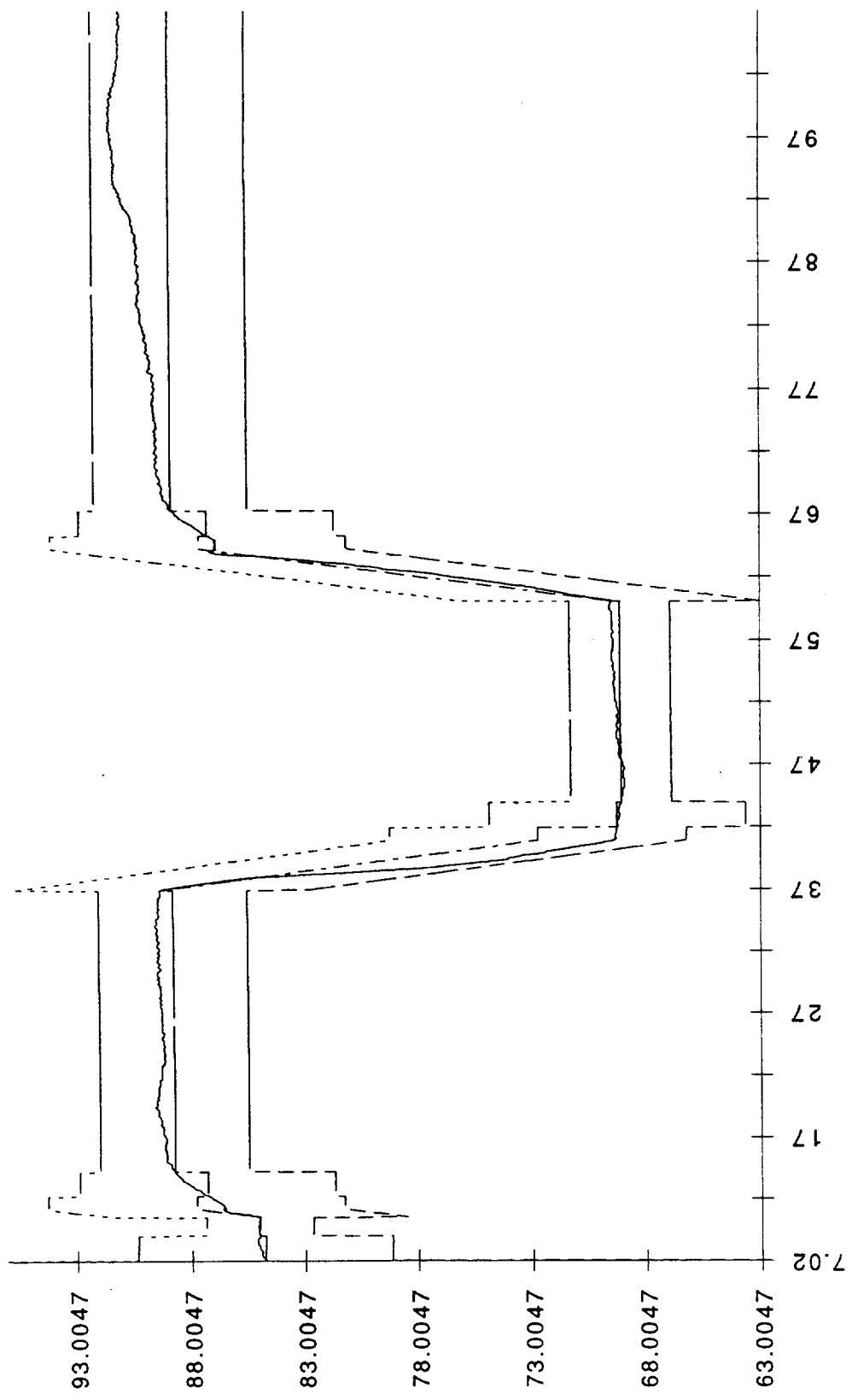
904-172 FPOV pos .T

904-172 FPOV pos .T

904-172 FPOV pos .T

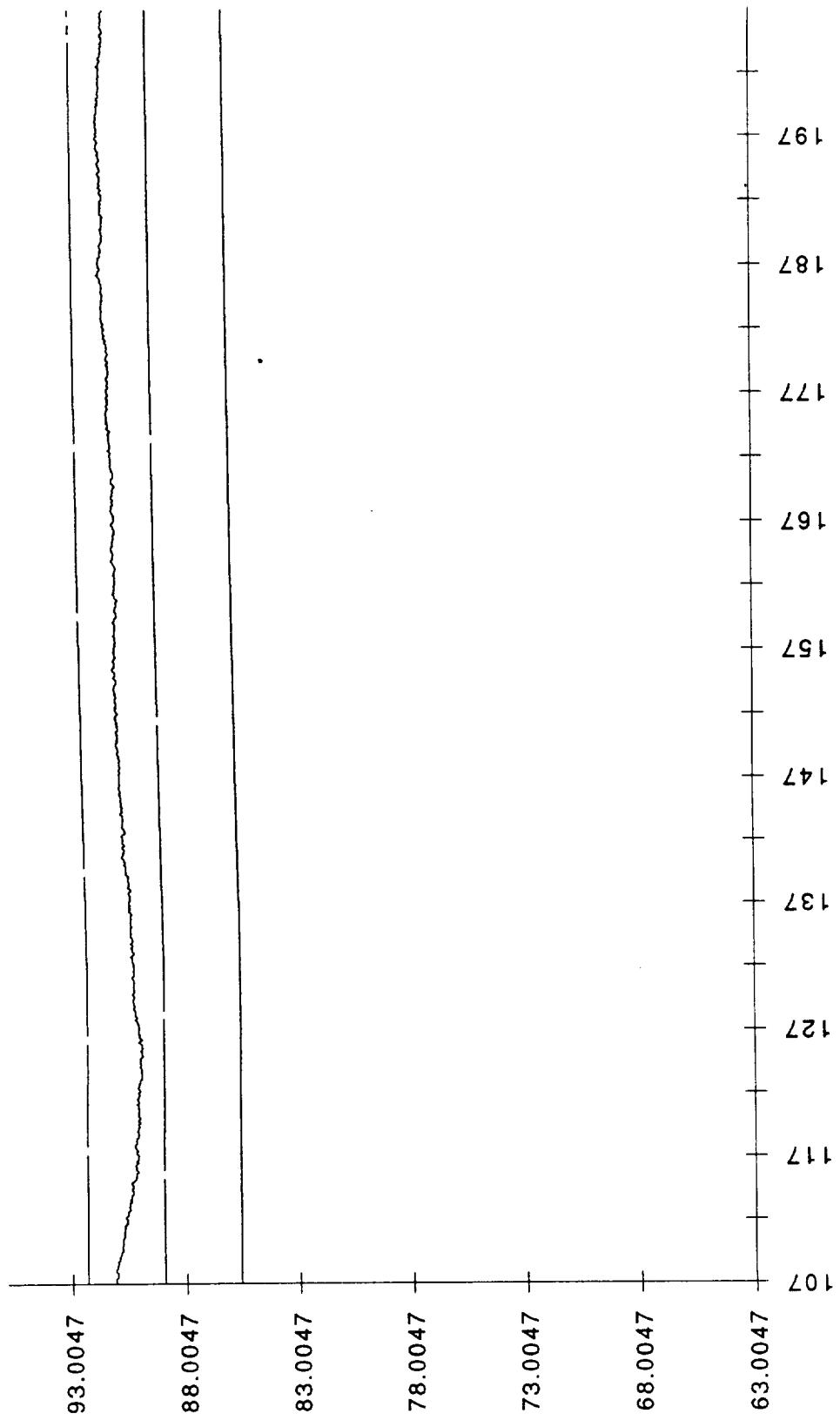


904-173 FPOV pos.T



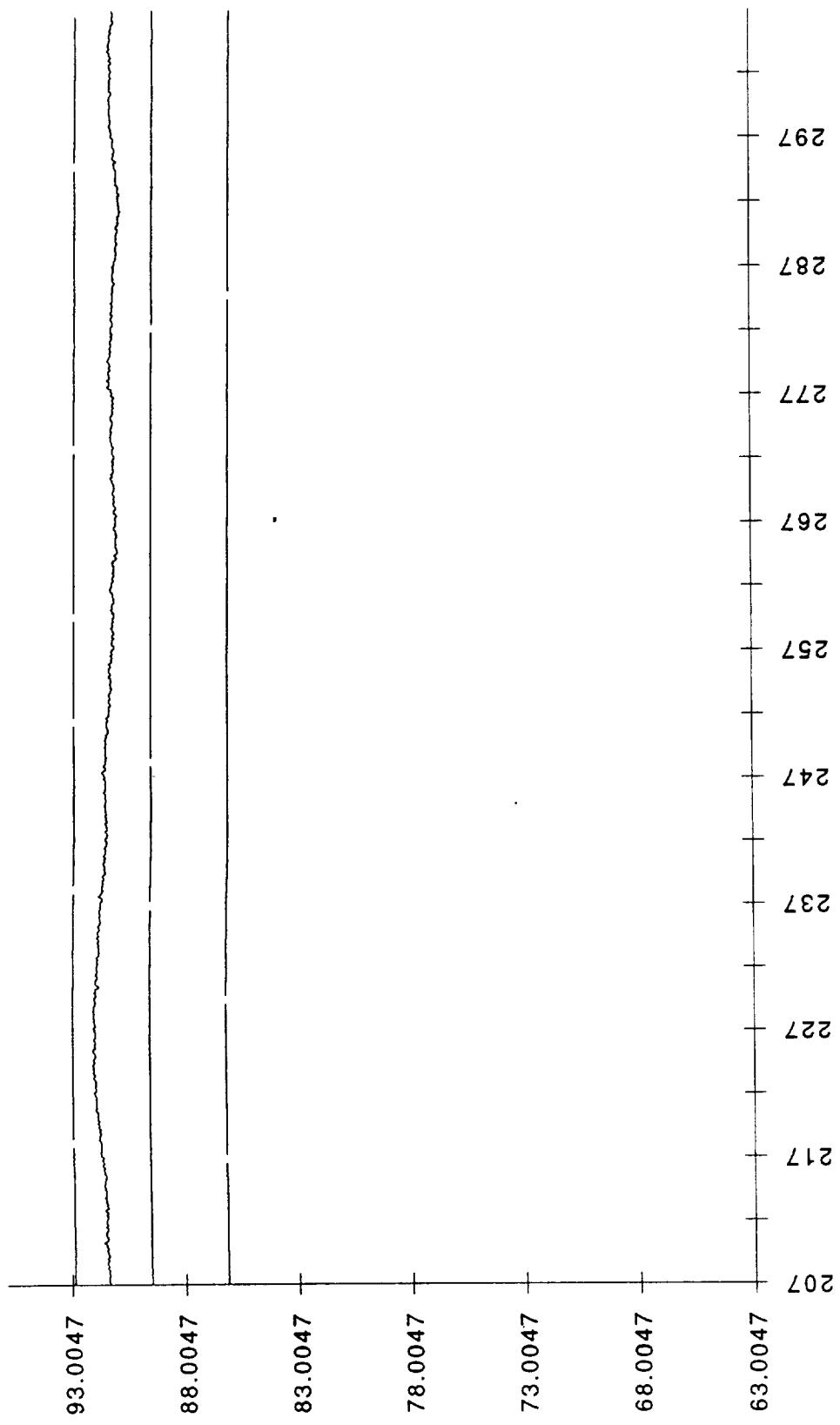
904-173 FPOV pos.T

904-173 FPOV pos.T



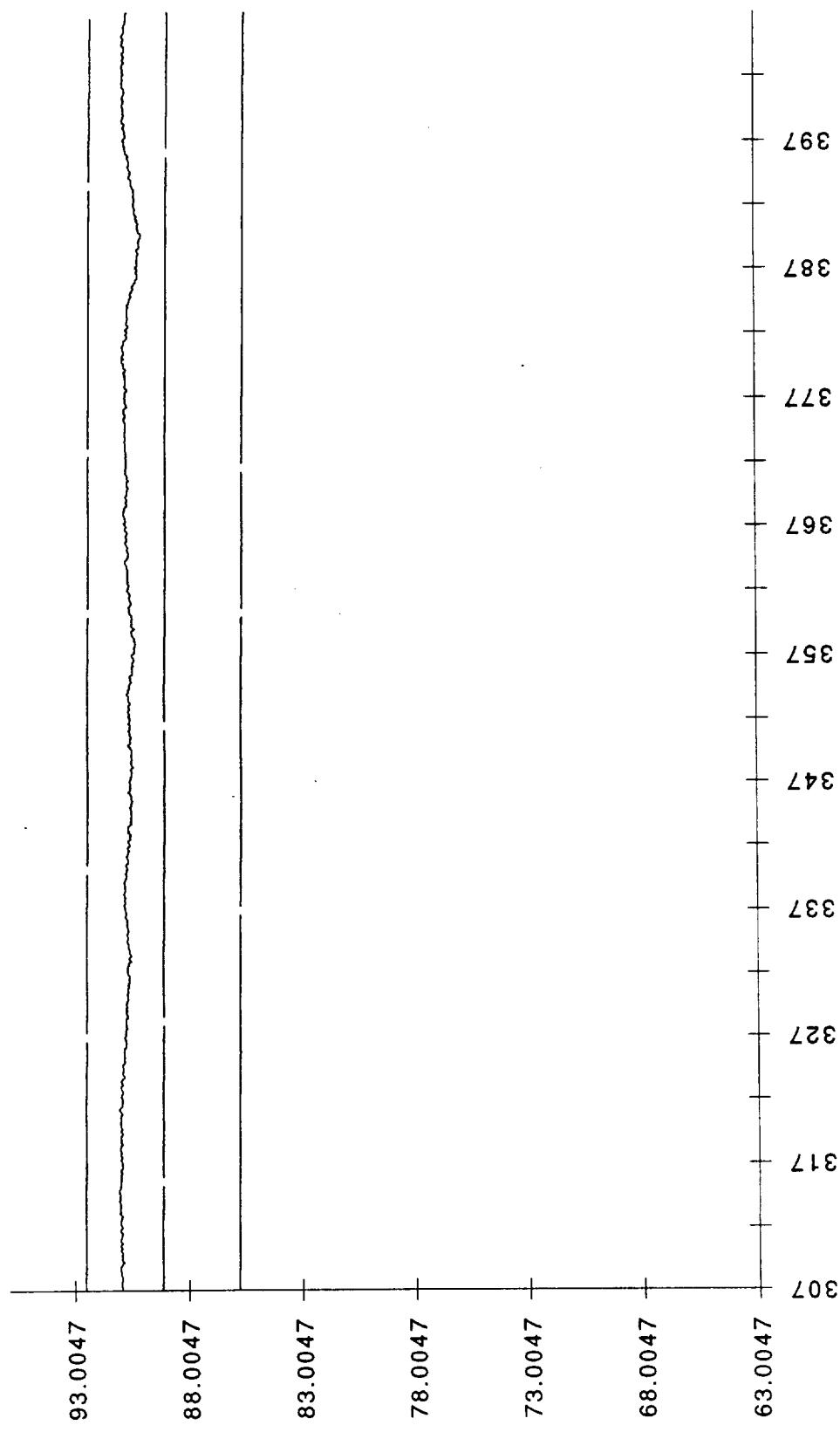
904-173 FPOV pos.T

904-173 FPOV pos.T



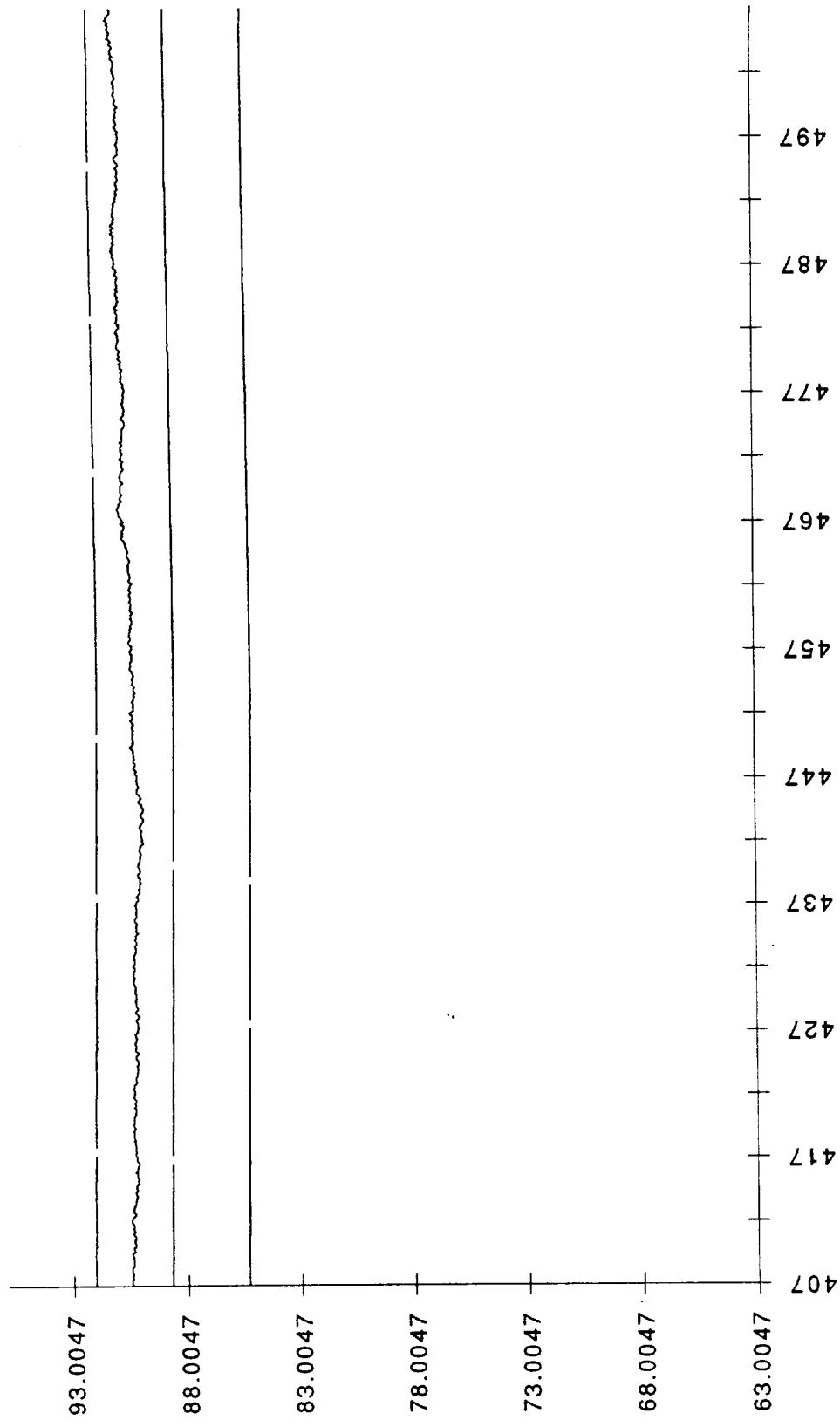
904-173 FPOV pos.T

904-173 FPOV pos.T



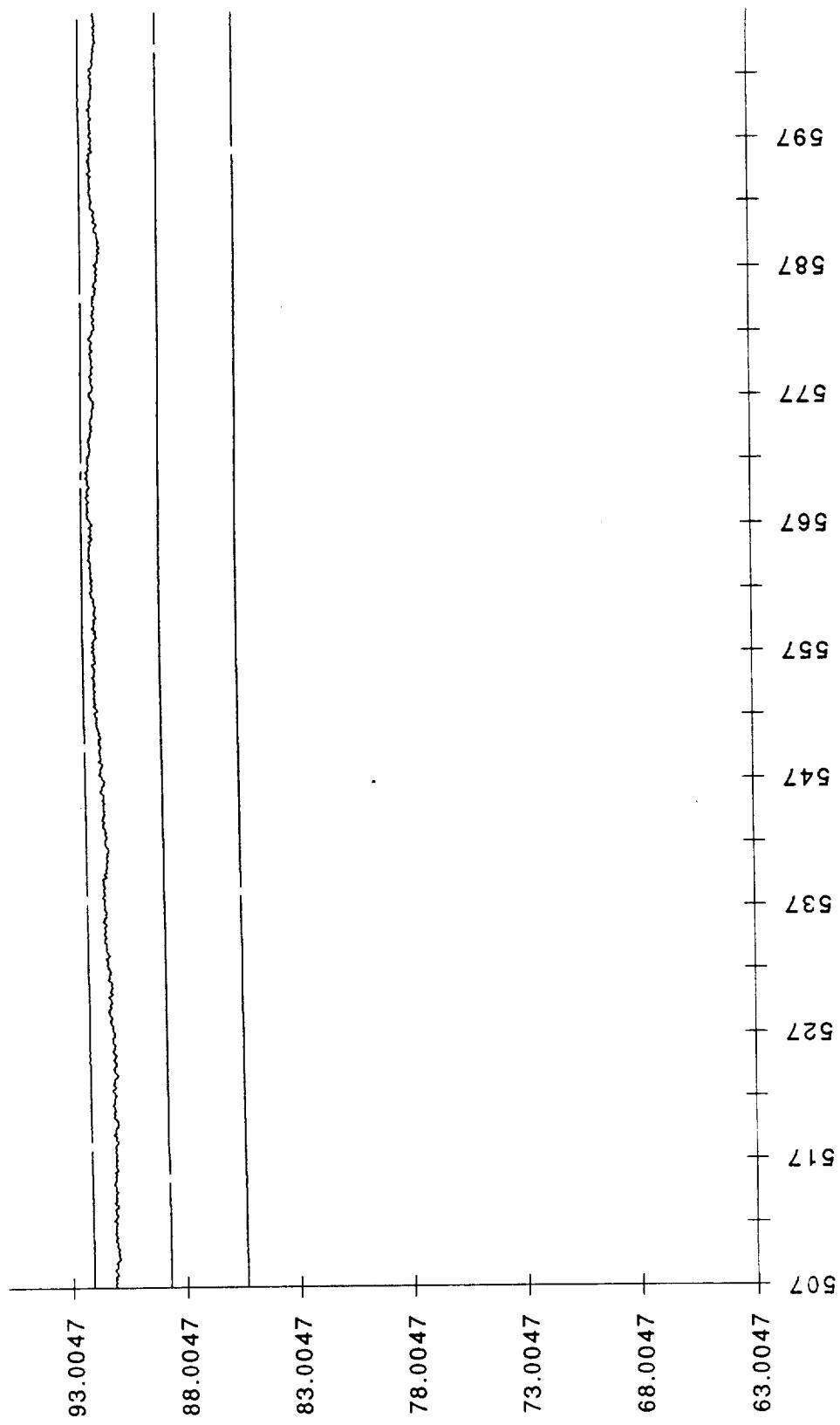
904-173 FPOV pos.T

904-173 FPOV pos.T



904-173 FPOV pos.T

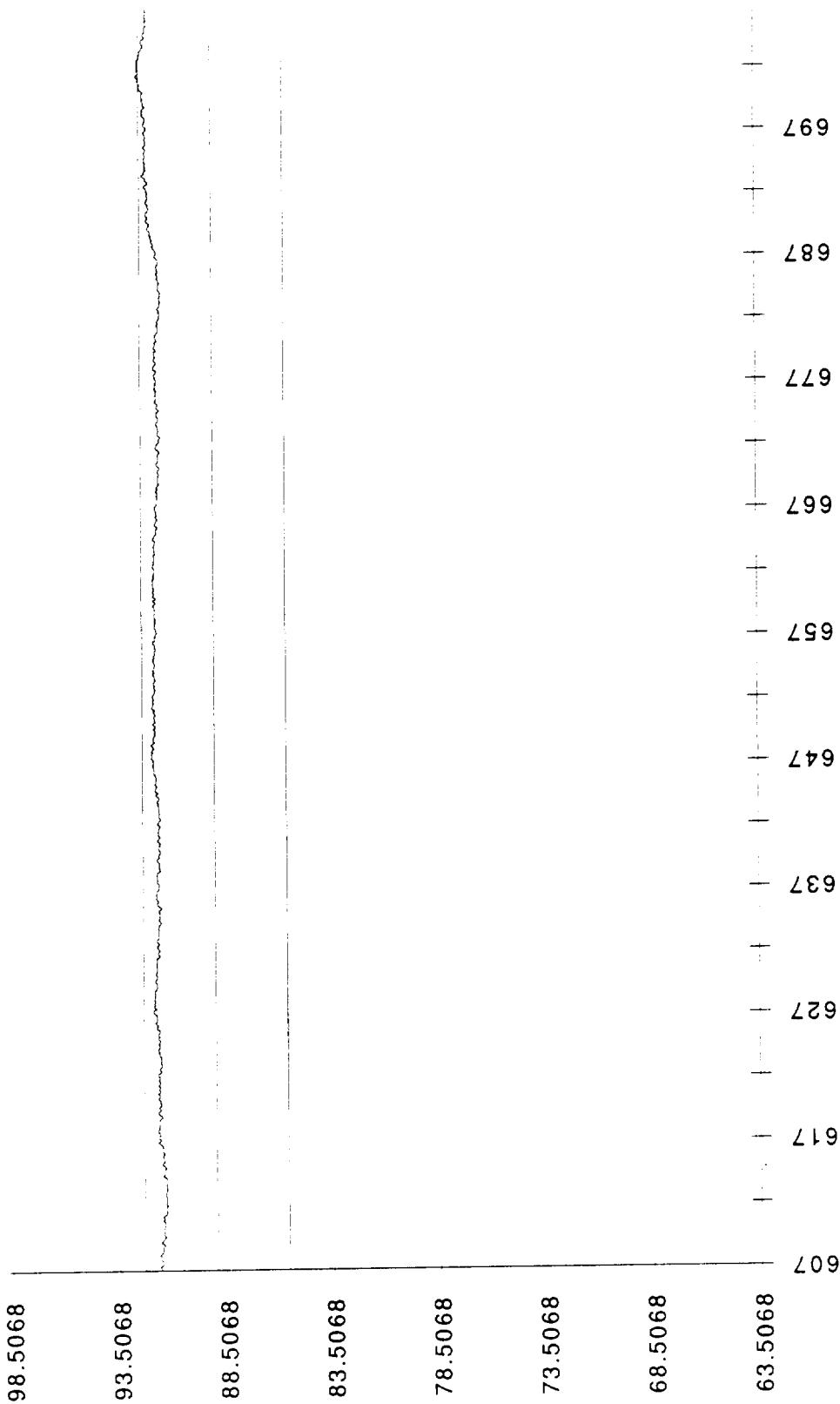
904-173 FPOV pos.T



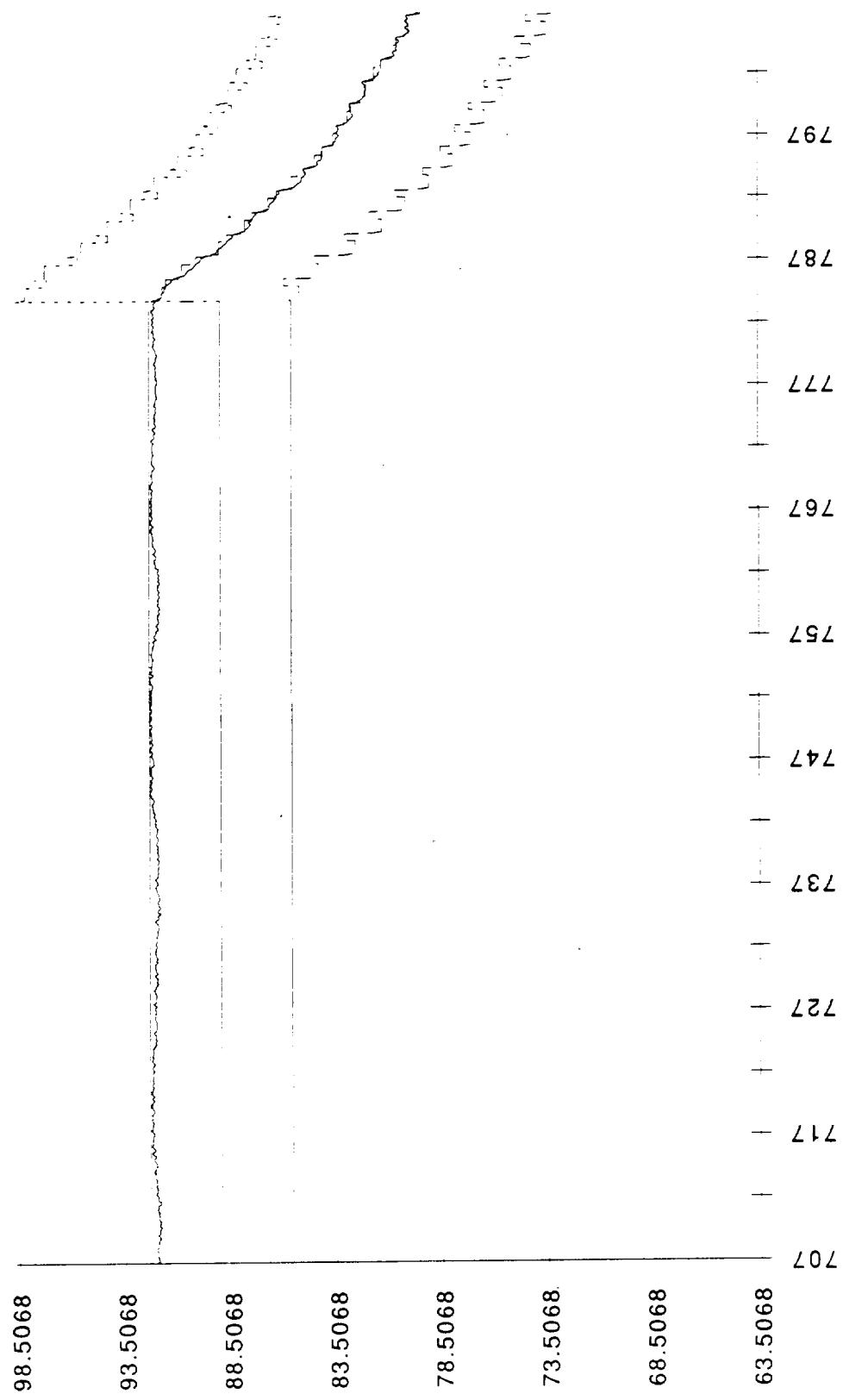
904-173 FPOV pos.T

904-173 FPOV pos .T

904-173 FPOV pos .T

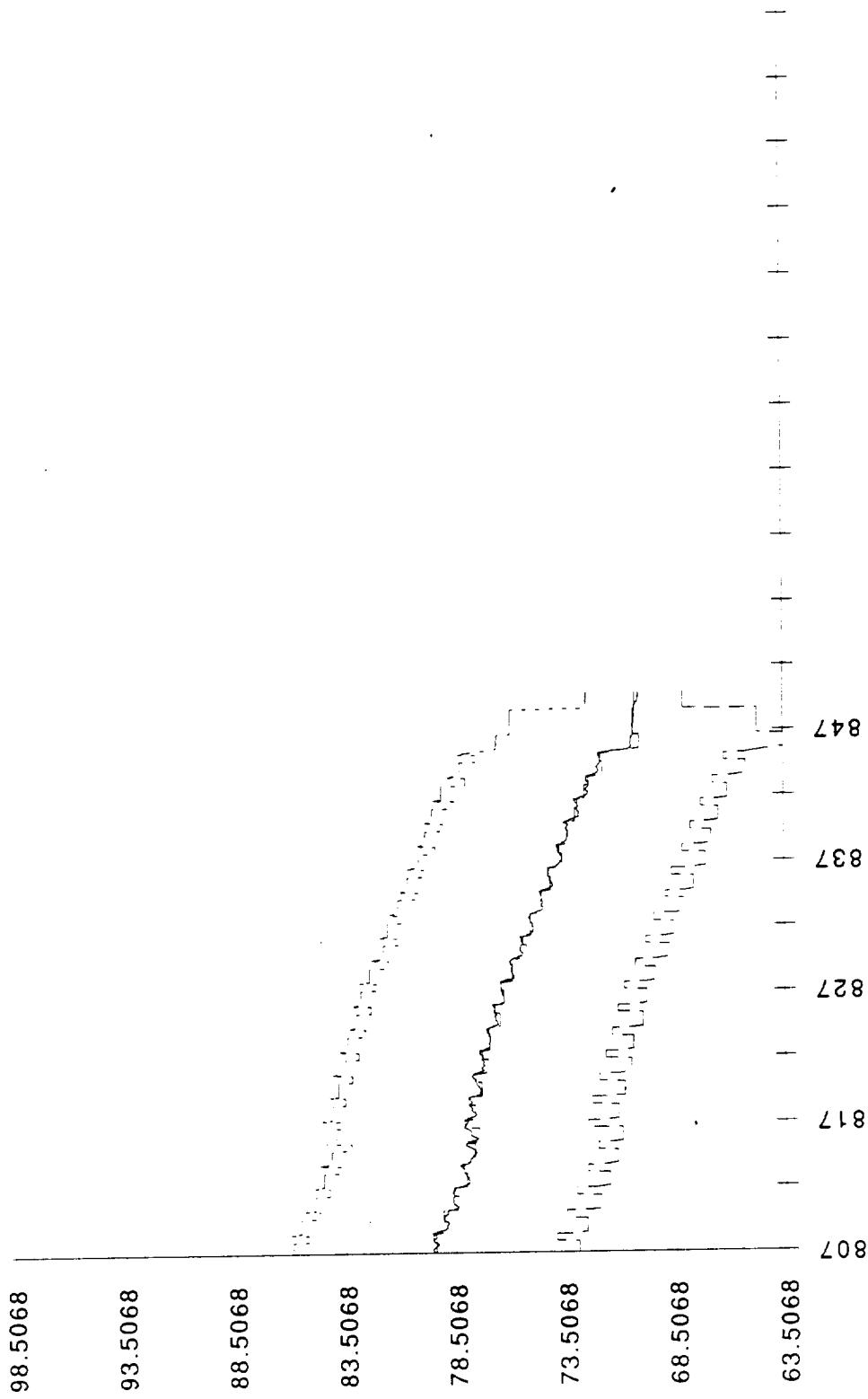


904-173 FPOV pos .T



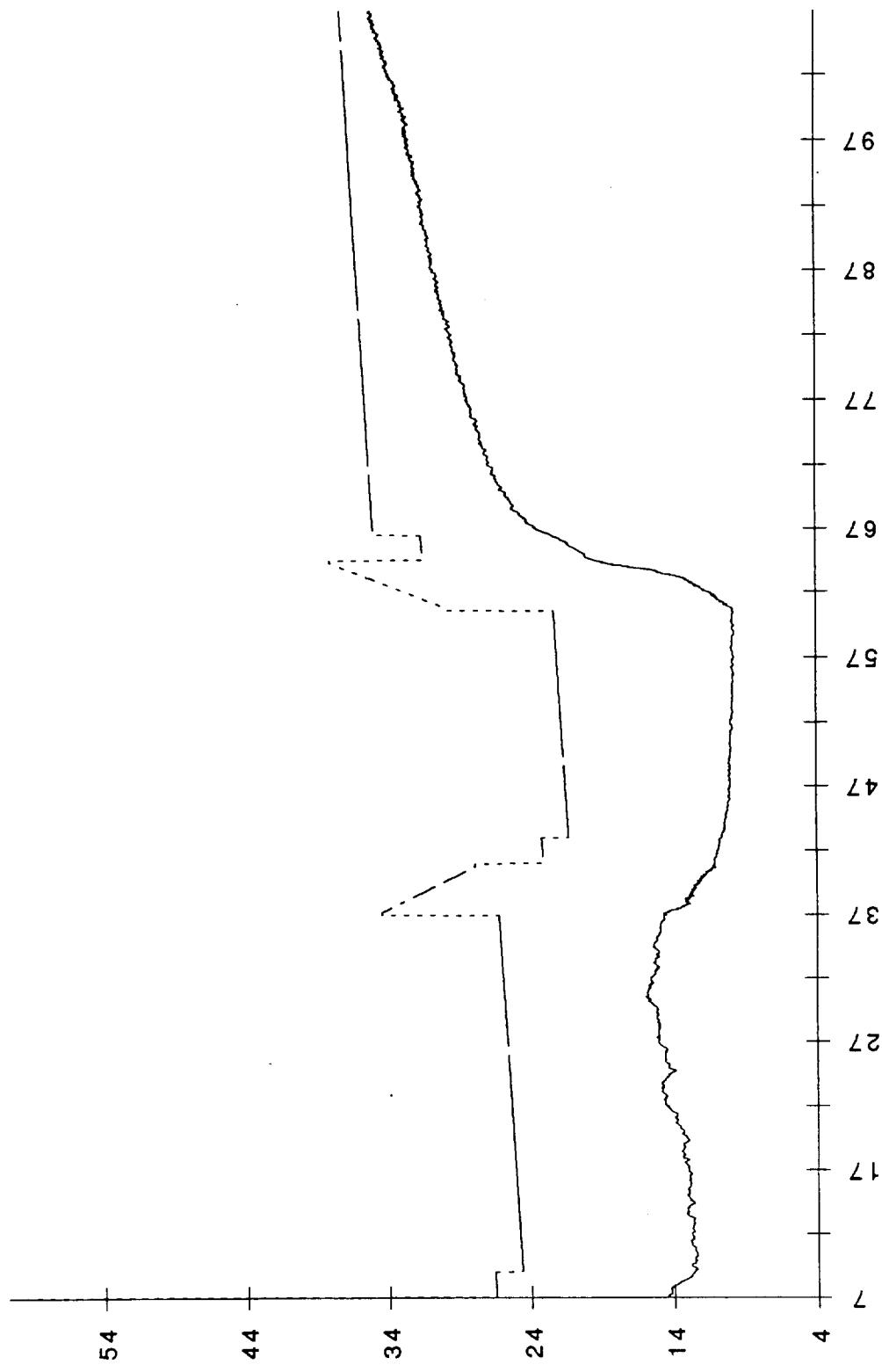
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904-173 FPOV pos .T



904-173 FPOV pos .T

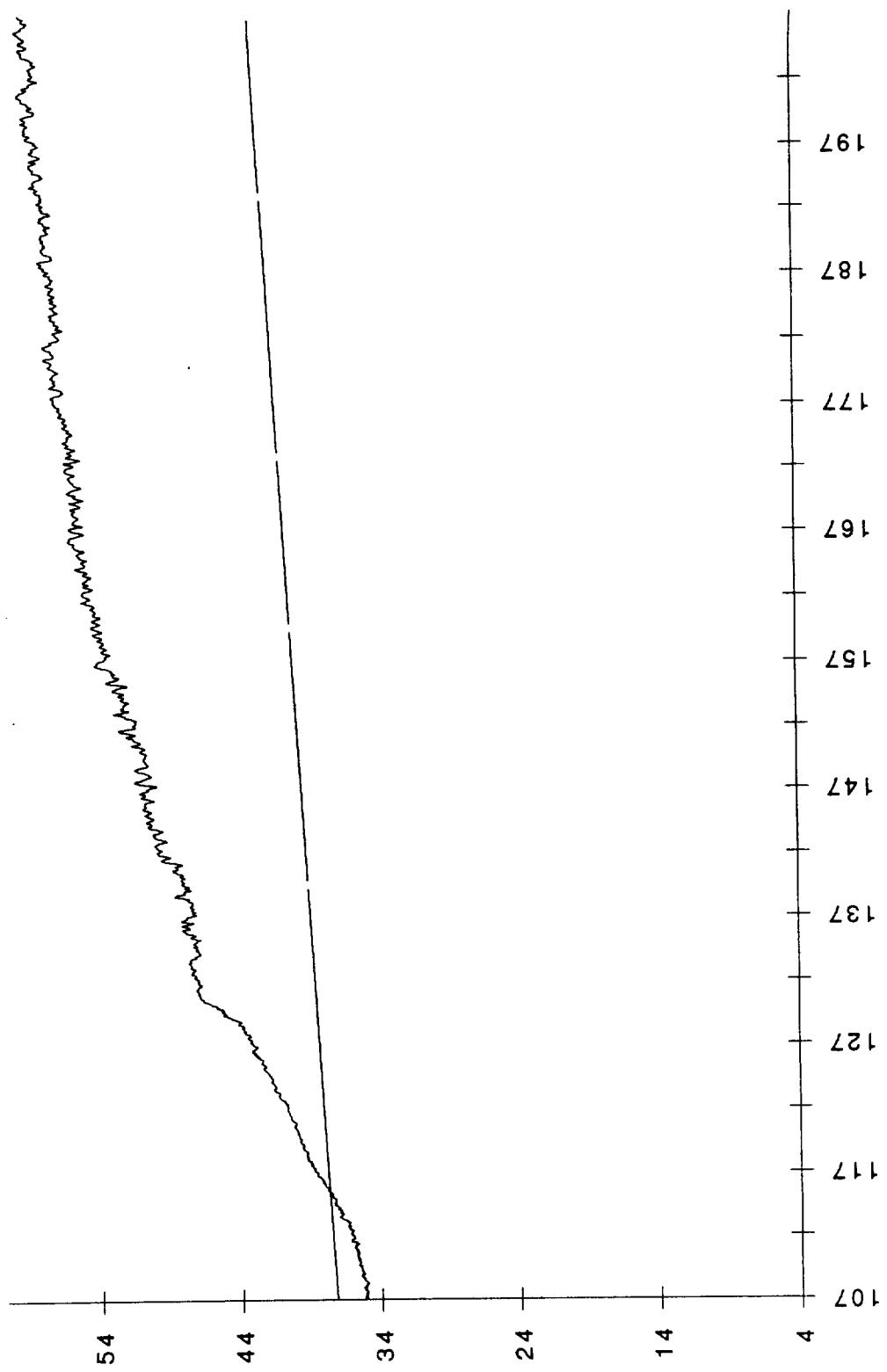
904-174 HPOP SSC pr.T



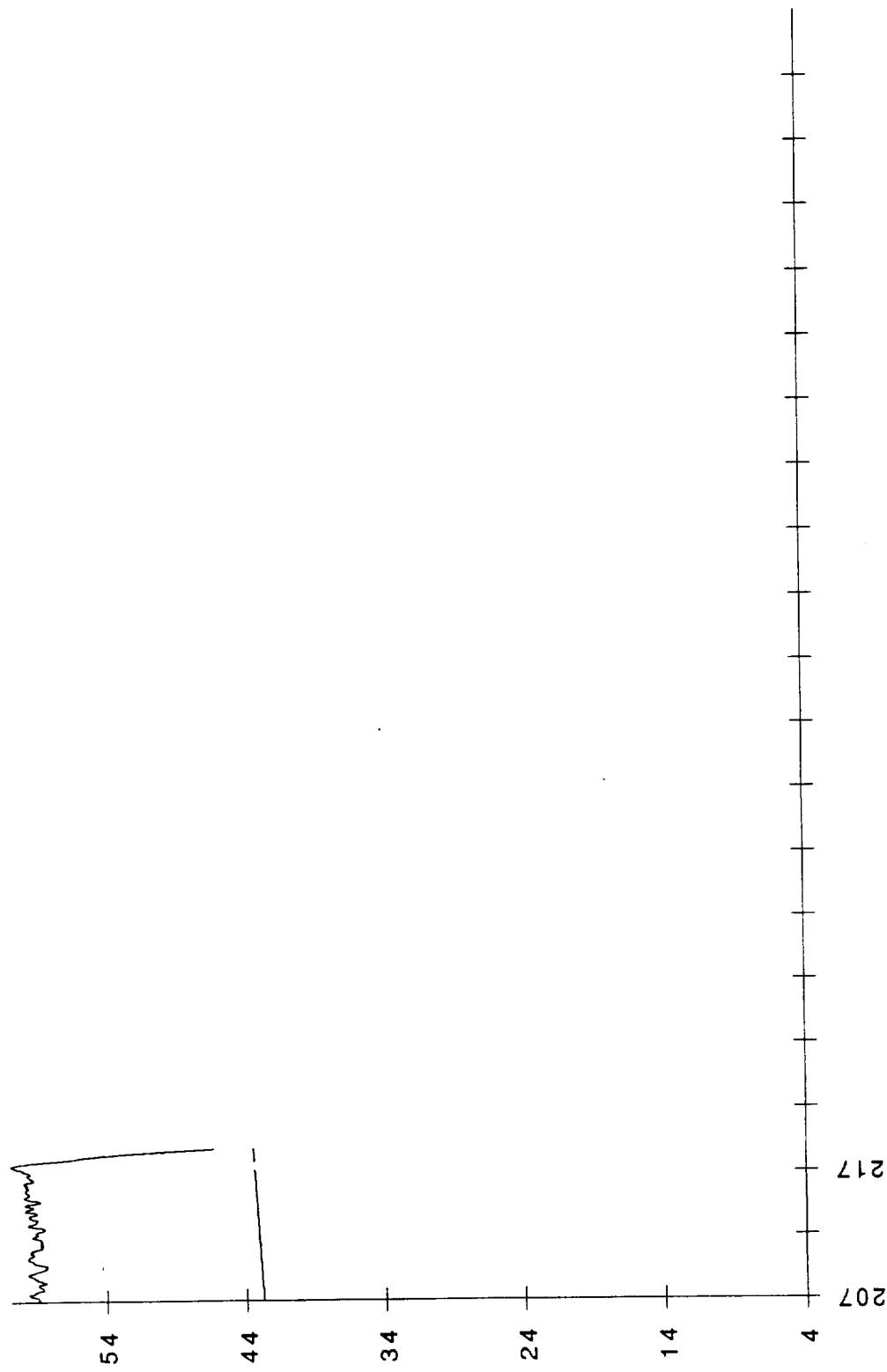
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904-174 HPOP SSC pr.T

904-174 HPOP SSC pr.T

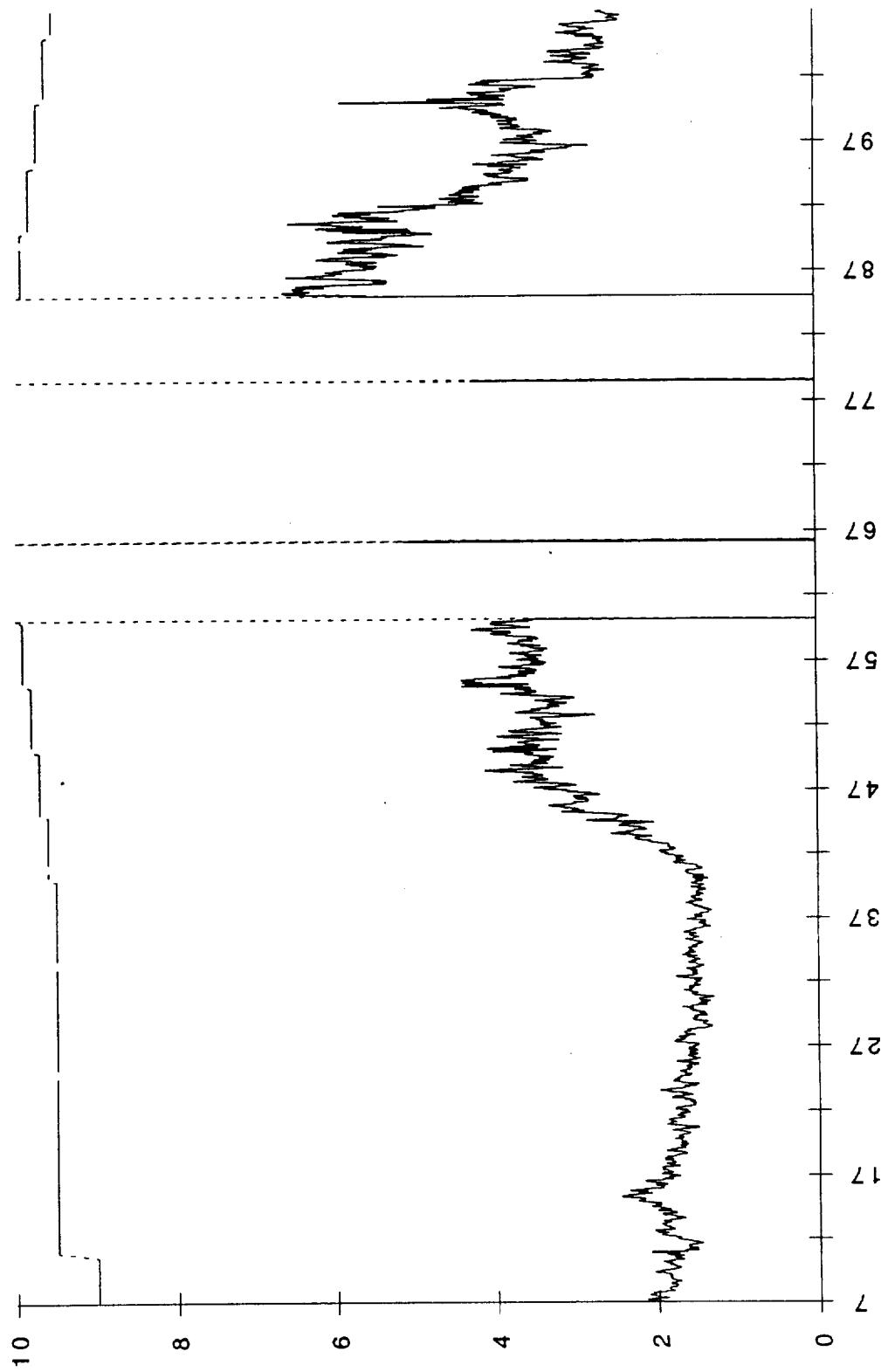


904-174 HPOP SSC pr.T



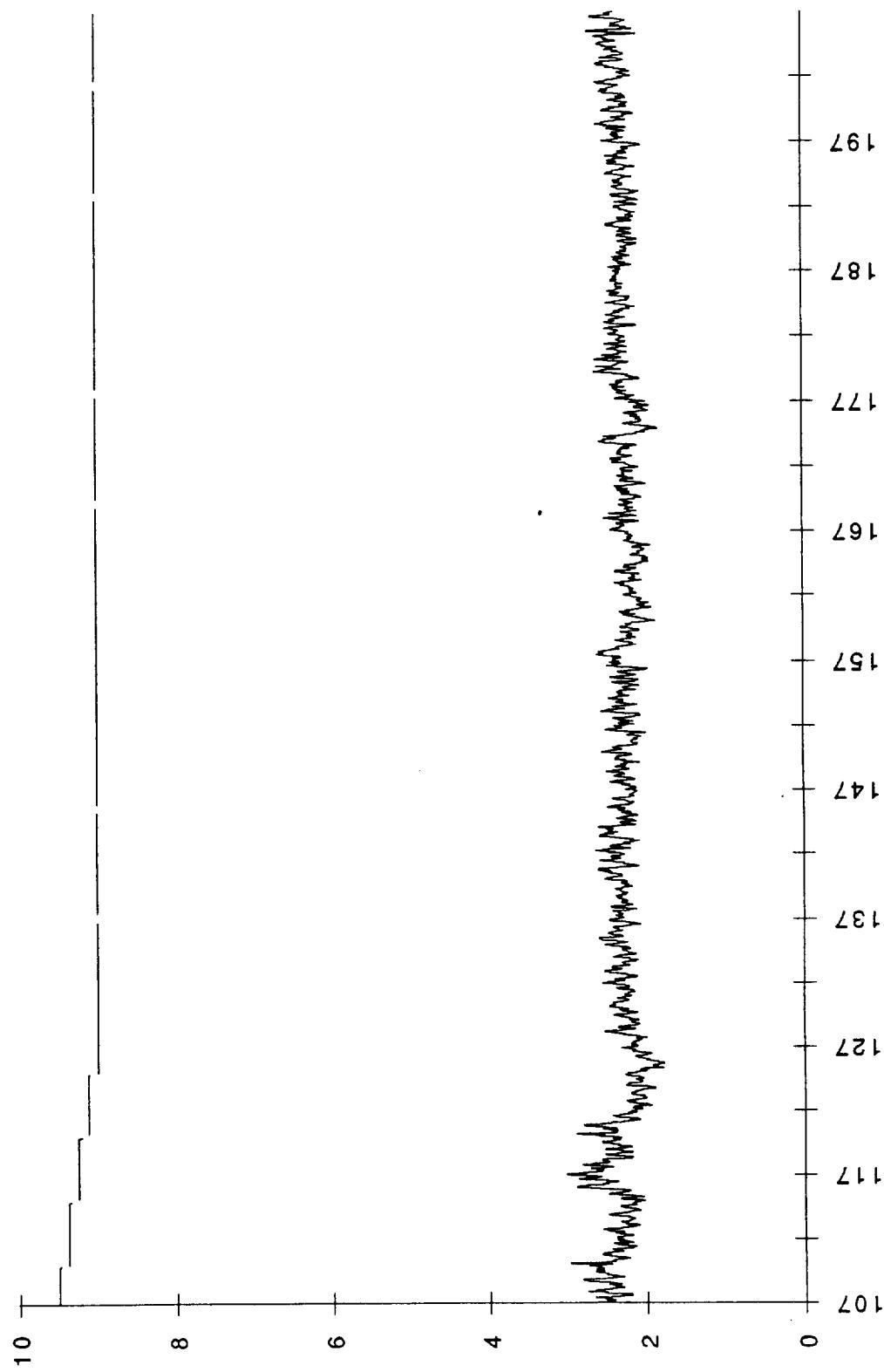
904-174 HPOP SSC pr.T

904-180 HPFP accel.T



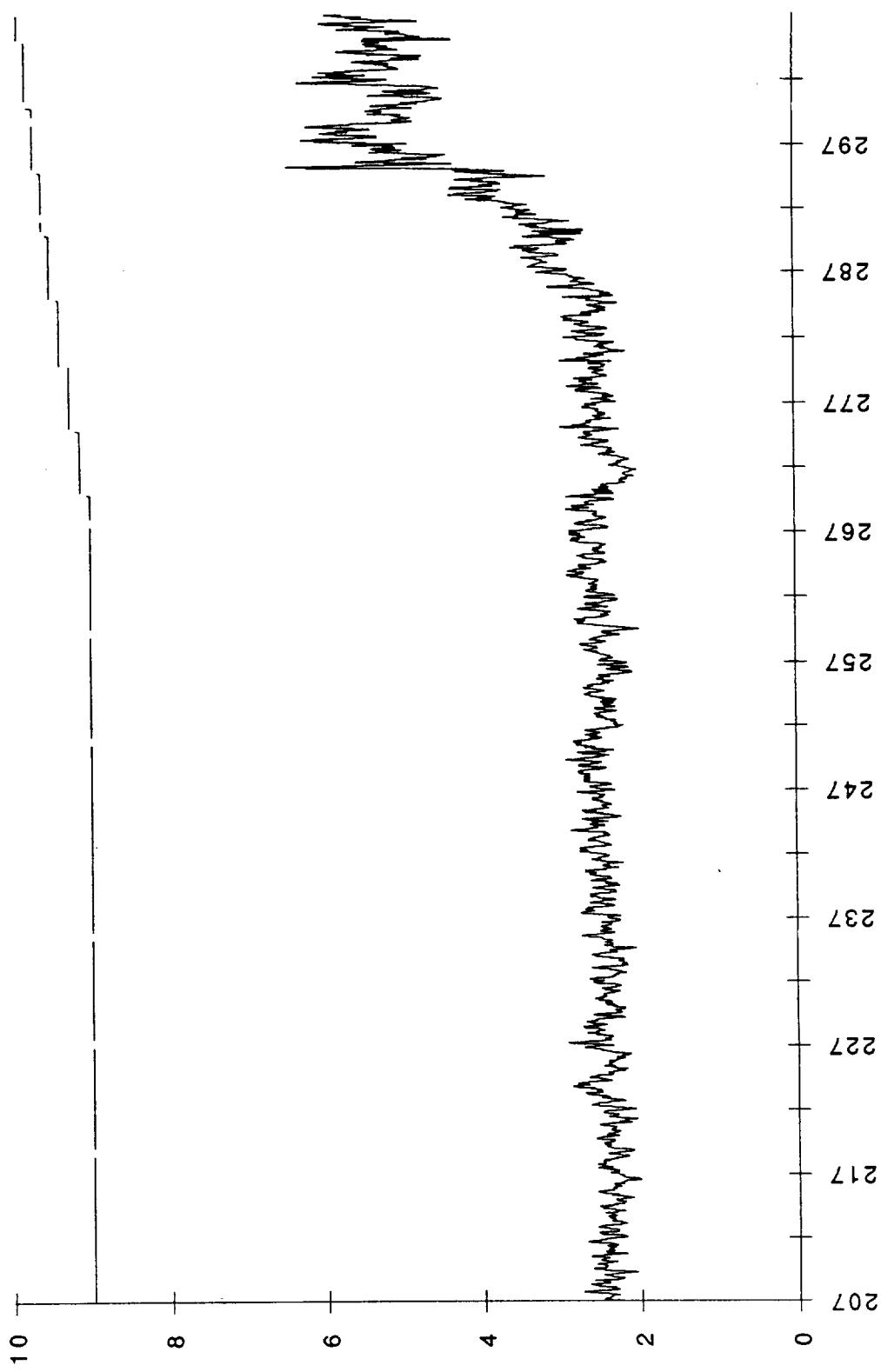
904-180 HPFP accel.T

904-180 HPFP accel.T



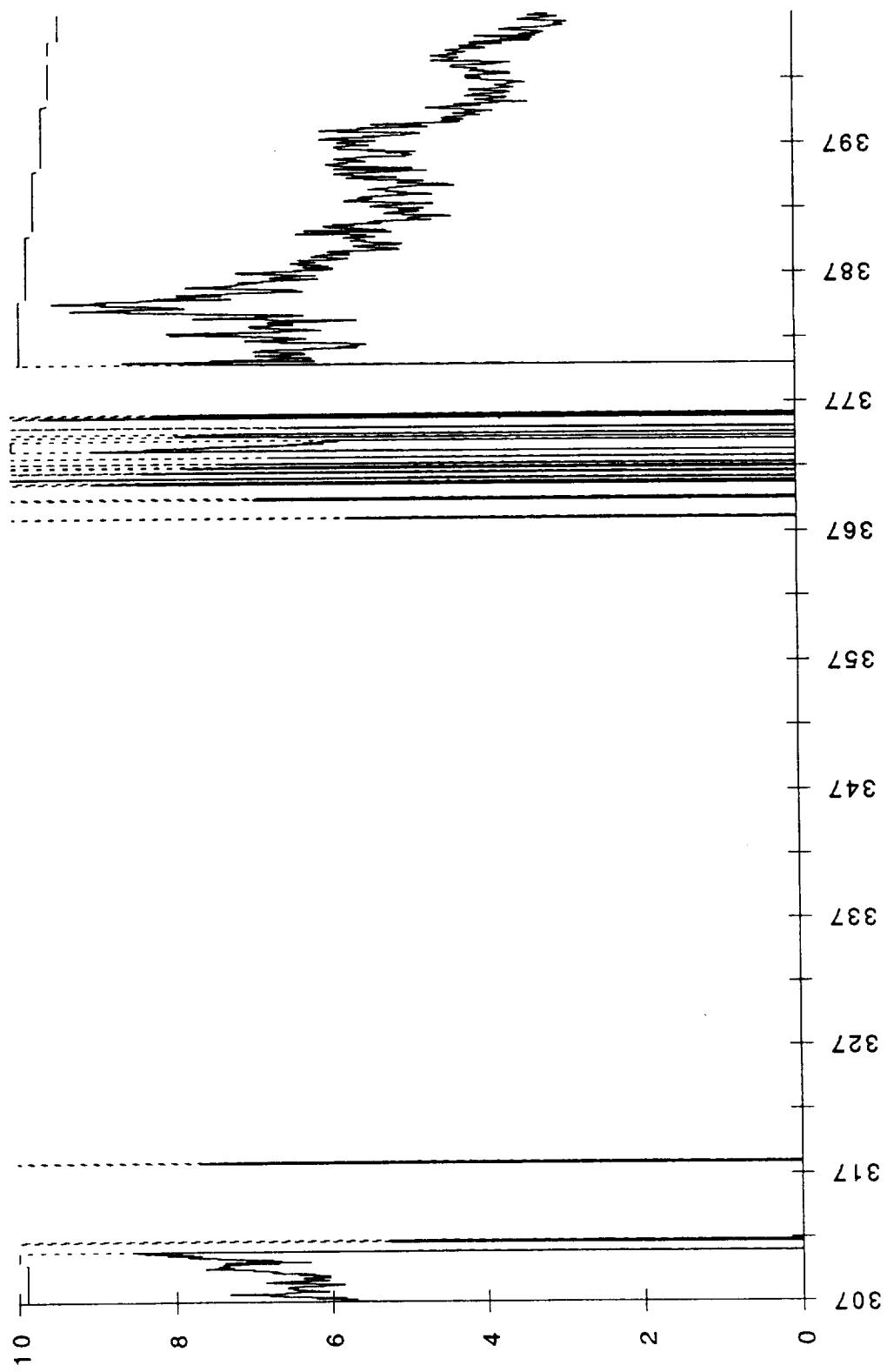
904-180 HPFP accel.T

904-180 HPFP accel.T



904-180 HPFP accel.T

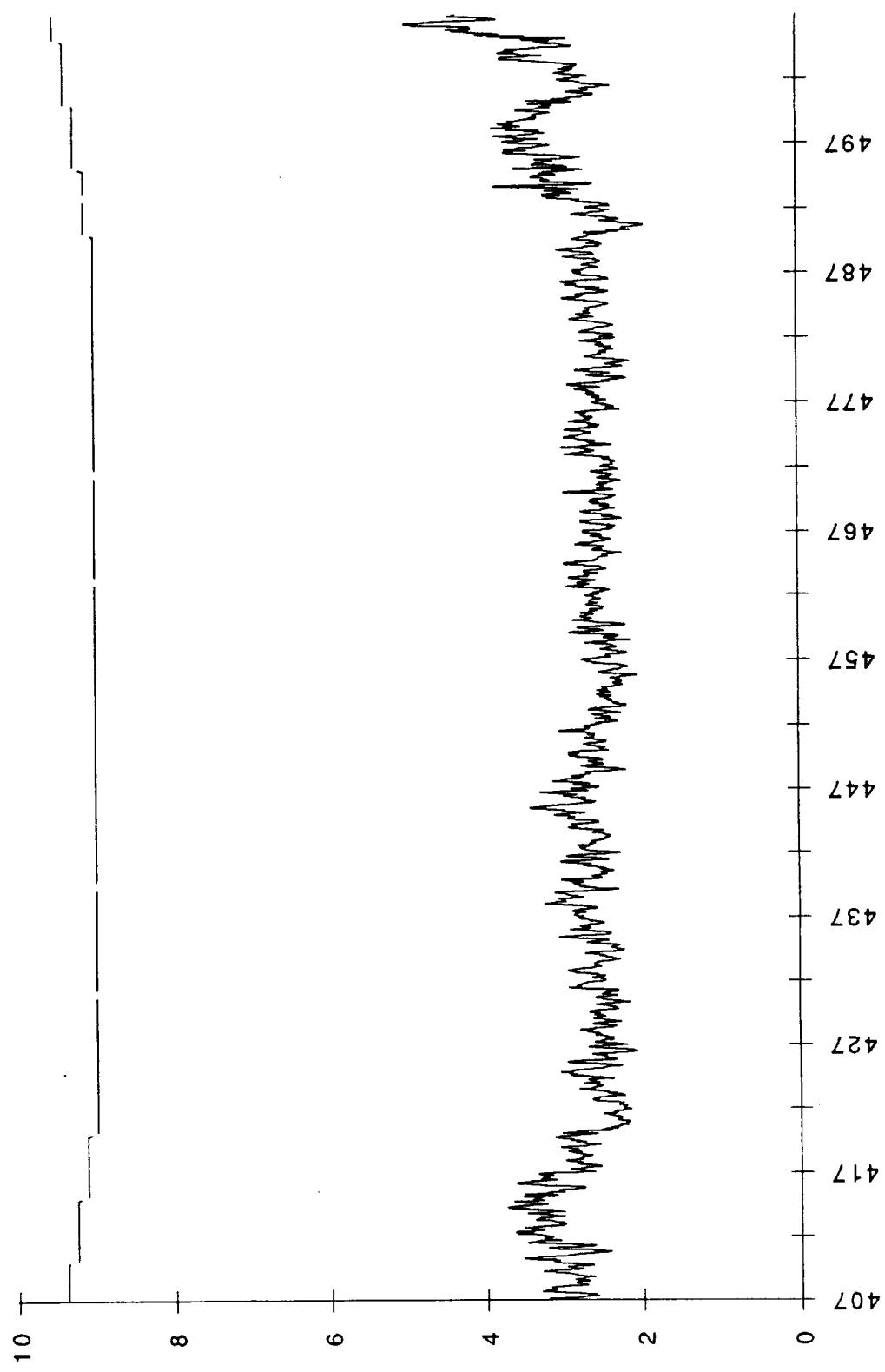
904-180 HPFP accel.T



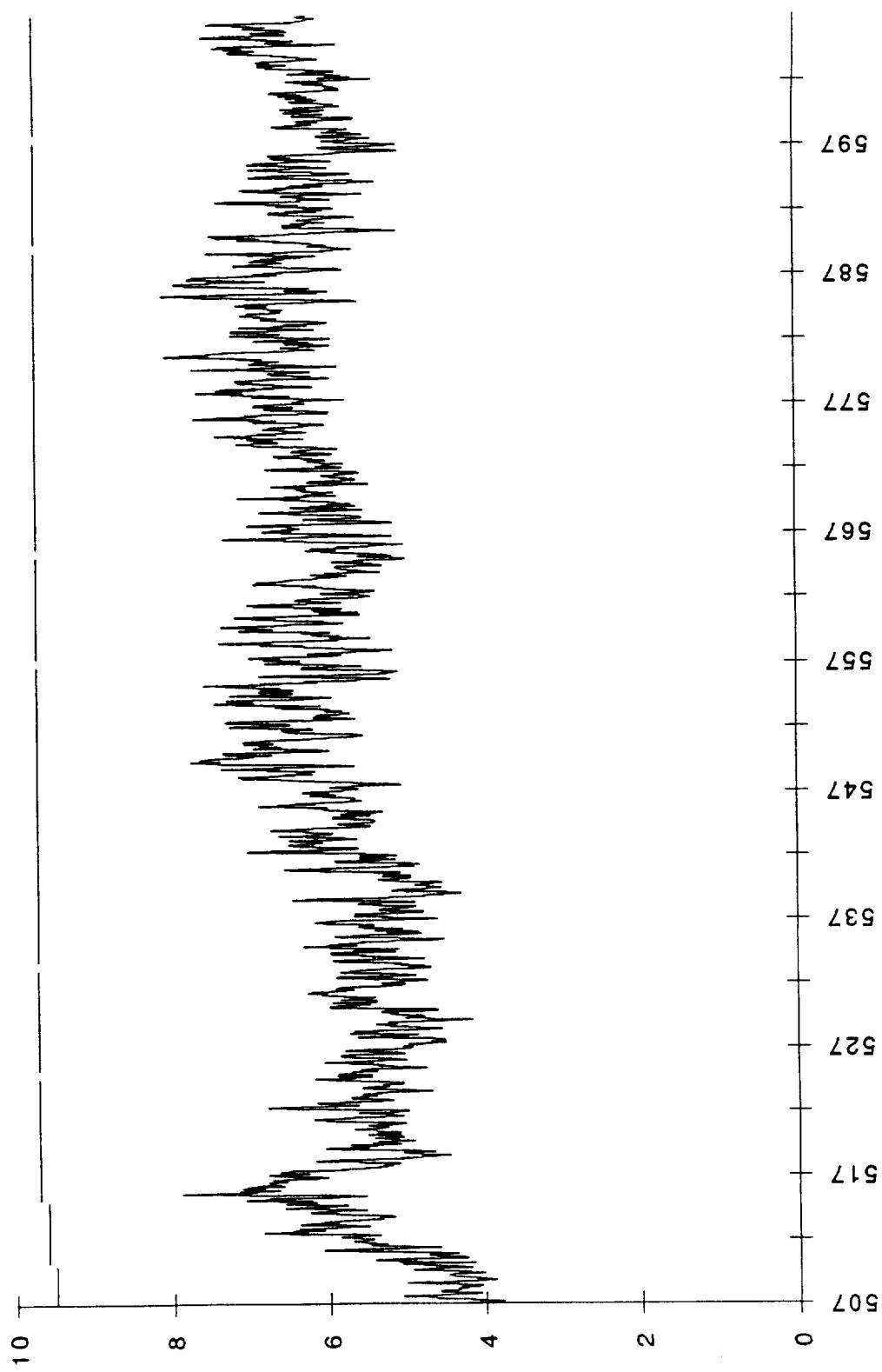
904-180 HPFP accel.T

904-180 HPFP accel.T

904-180 HPFP accel.T



904-180 HPFP accel.T



904-180 HPFP accel.T

**Appendix C3
Good Test Plot
Pratt LOX Pump w/ Modified CCV Schedule**

901-723 HPFP TDT A.T

1792.7748

1692.7748

1592.7748

1492.7748

1392.7748

1292.7748

7.02

17

37

47

57

67

77

87

97

901-723 HPFP TDT A.T

901-723 HPFP TDT A.T

1792.7748

1692.7748

1592.7748

1492.7748

1392.7748

1292.7748

107

127
117

147
157

167
177

187
197

901-723 HPFP TDT A.T

1792.7748

1692.7748

1592.7748

1492.7748

1392.7748

1292.7748

207
217
227
237
247
257
267
277
287
297

901-723 HPFP TDT A.T

1792.7748

1692.7748

1592.7748

1492.7748

1392.7748

1292.7748

397

387

377

367

357

347

337

327

317

307

901-723 HPFP TDT A.T

901-723 HPFP TDT A.T

901-723 HPFP TDT A.T

1792.7748

1692.7748

1592.7748

1492.7748

1392.7748

1292.7748

497
487
477
467
457
447
437
427
417
407

901-723 HPFP TDT A.T

1792.7748

1692.7748

1592.7748

1492.7748

1392.7748

1292.7748

507

517

527

537

547

557

567

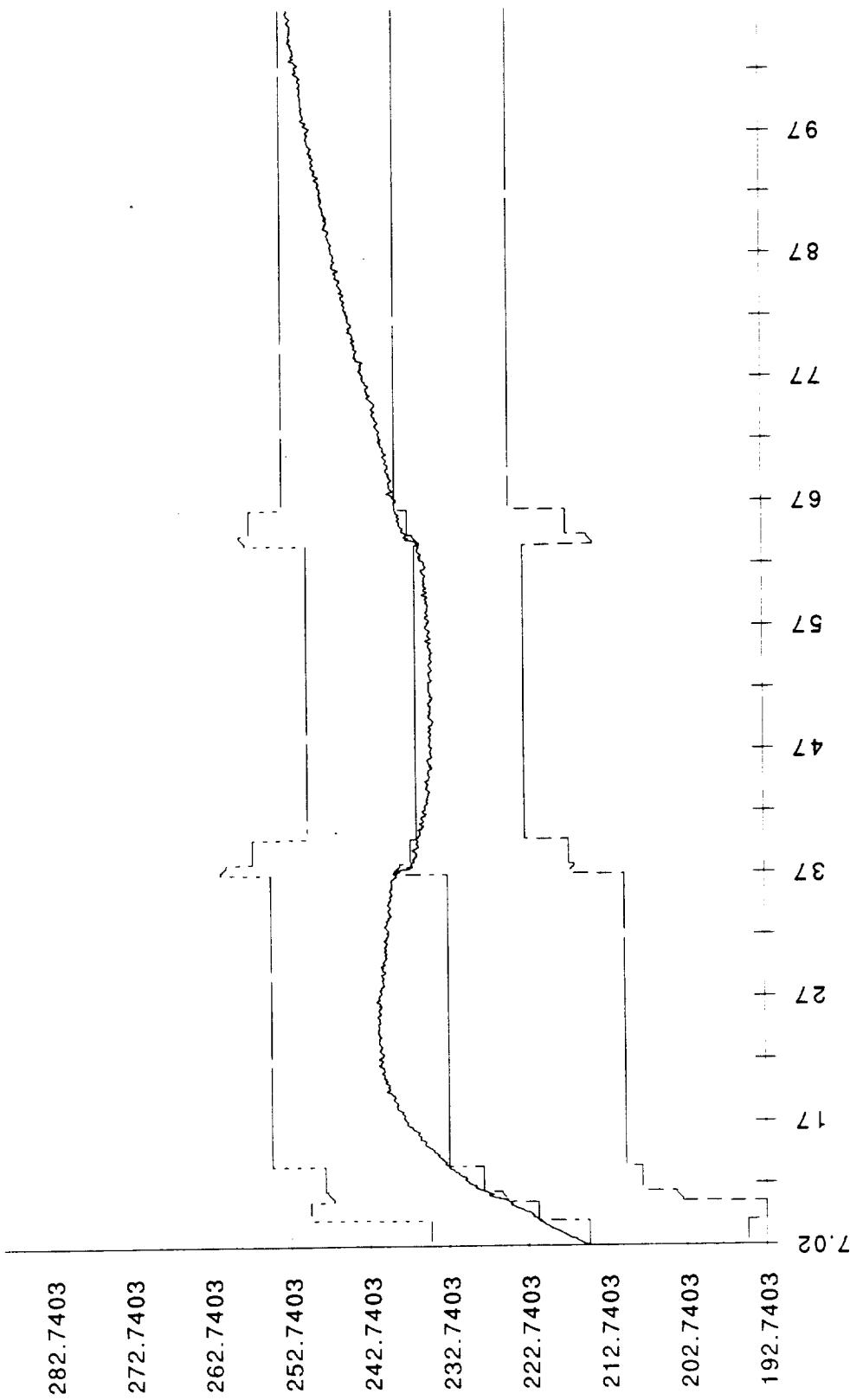
577

587

597

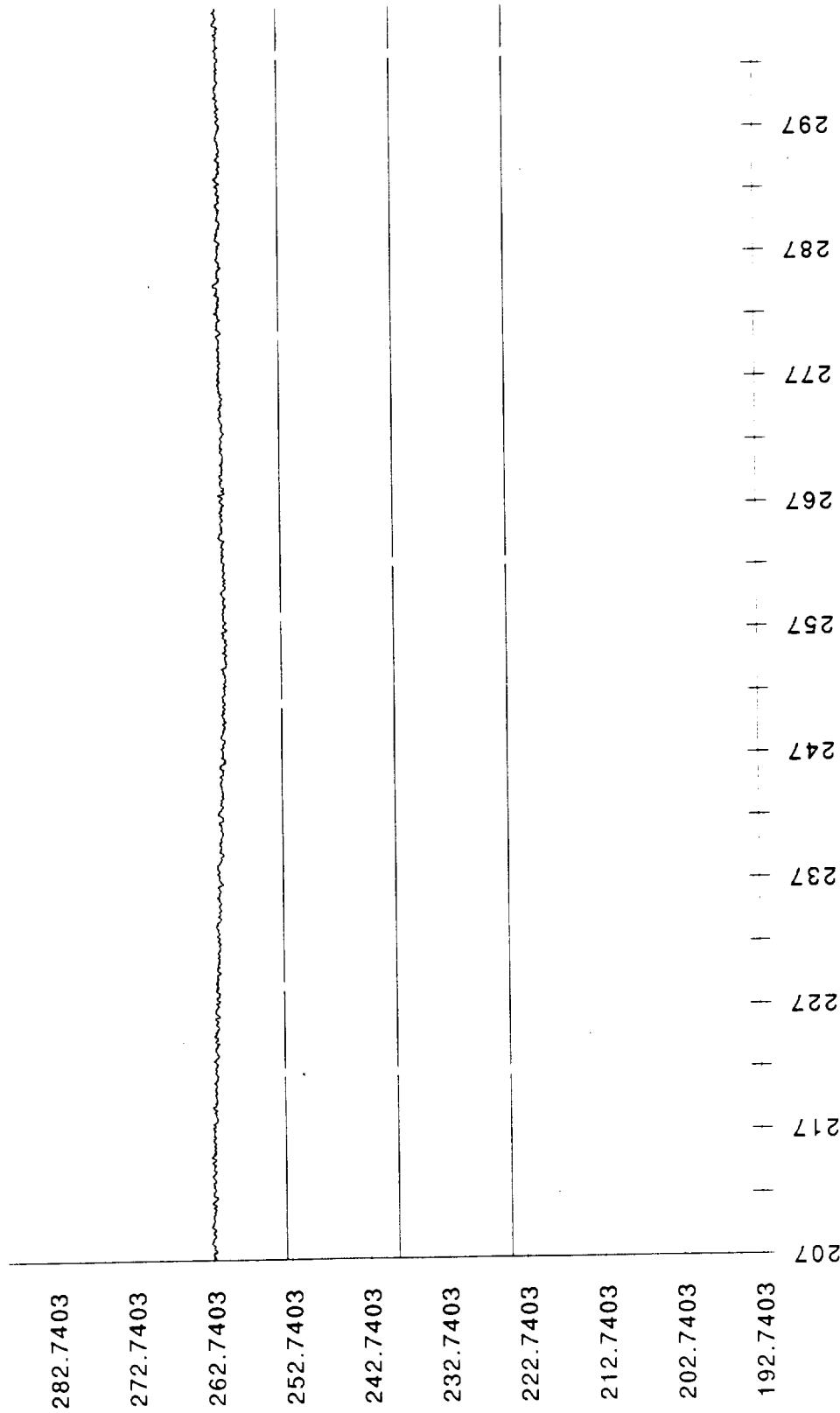
901-723 HPFP TDT A.T

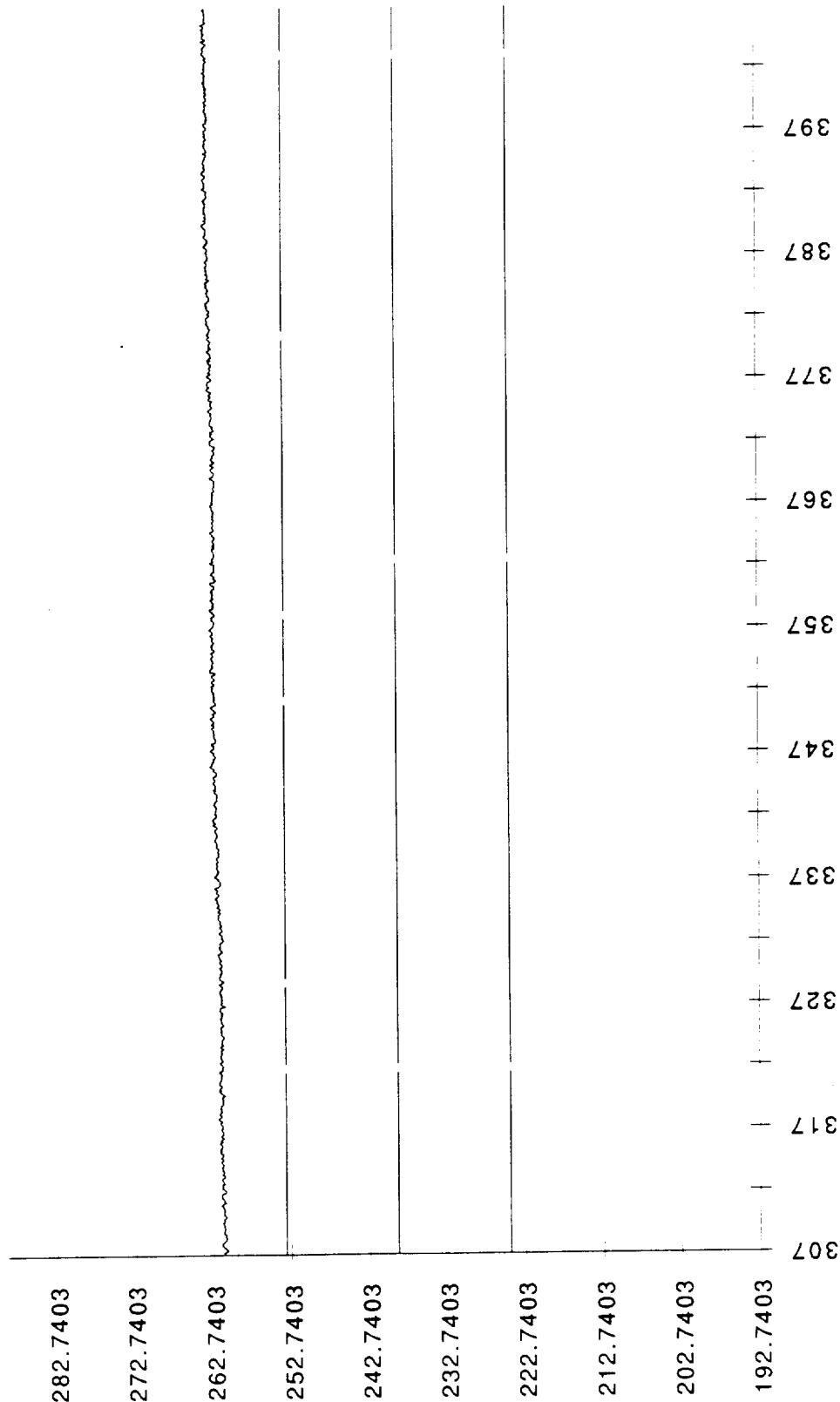
901-723 HPOP IMSL pr.T



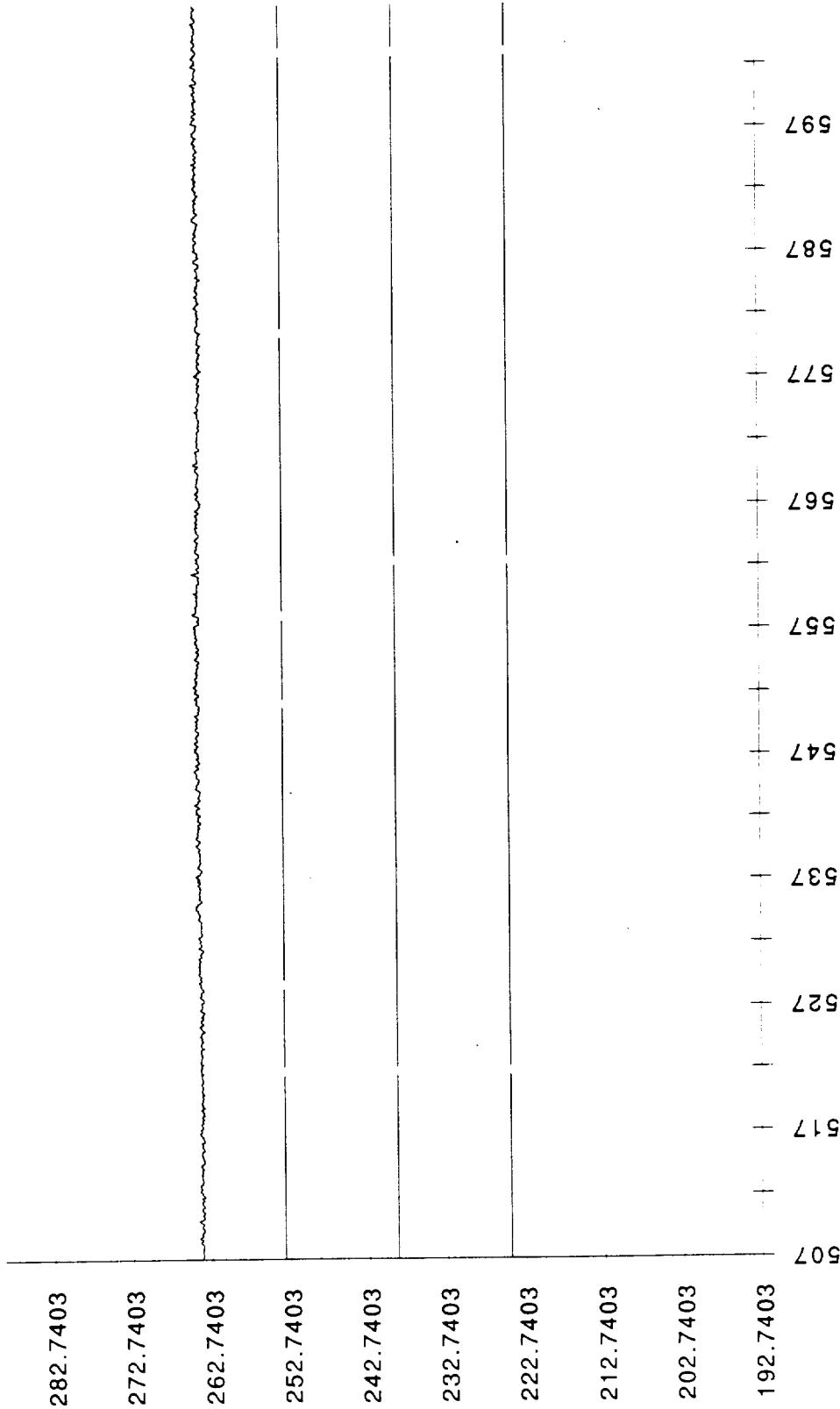
901-723 HPOP IMSL pr.T

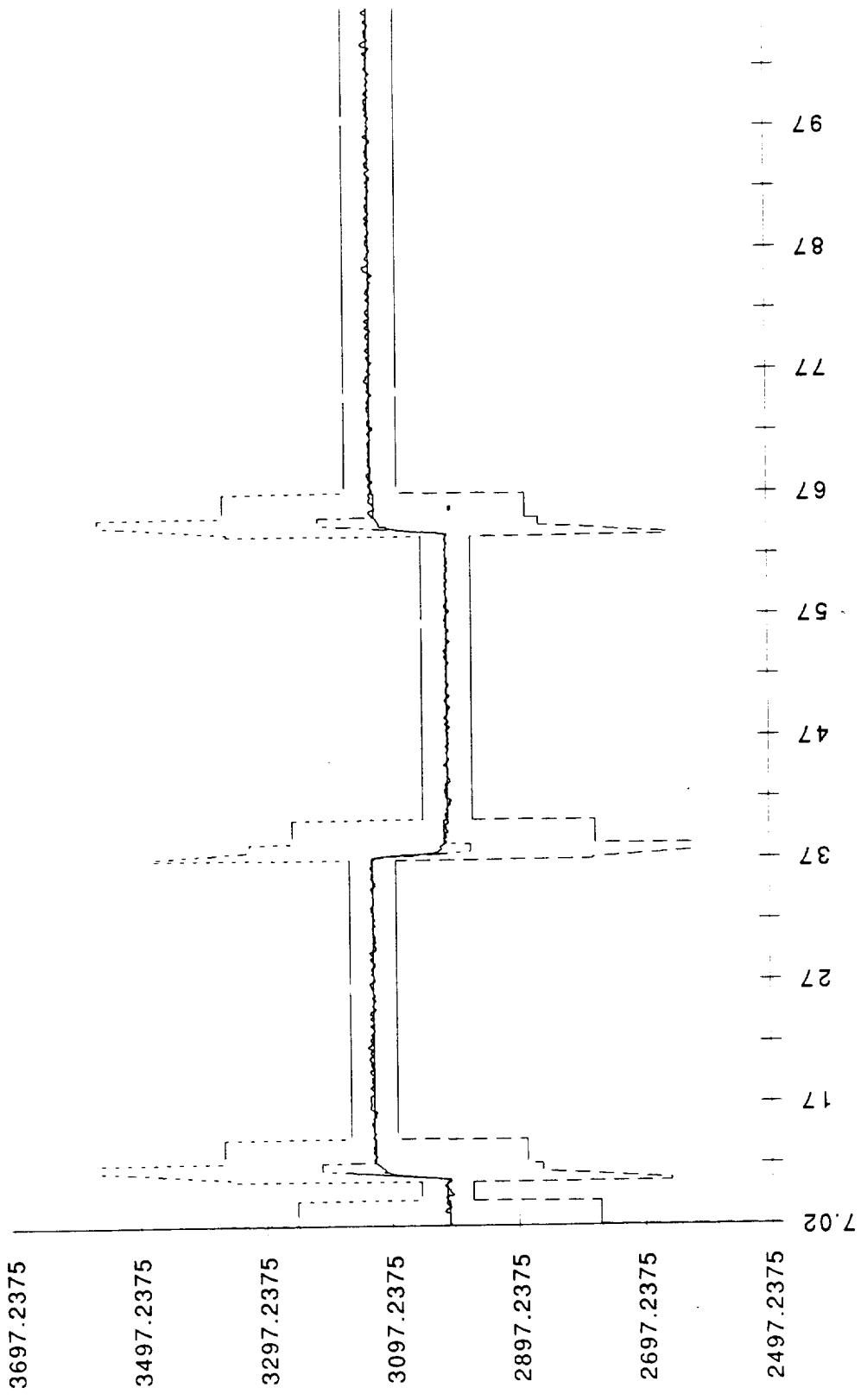












3697.2375

3497.2375

3297.2375

3097.2375

2897.2375

2697.2375

107
117
127
137
147
157
167
177
187
197

3697.2375

3497.2375

3297.2375

3097.2375

2897.2375

2697.2375

2497.2375

207

227
217

237
247

267

277
287

297

3697.2375

3497.2375

3297.2375

3097.2375

2897.2375

2697.2375

2497.2375

397

387

377

367

357

347

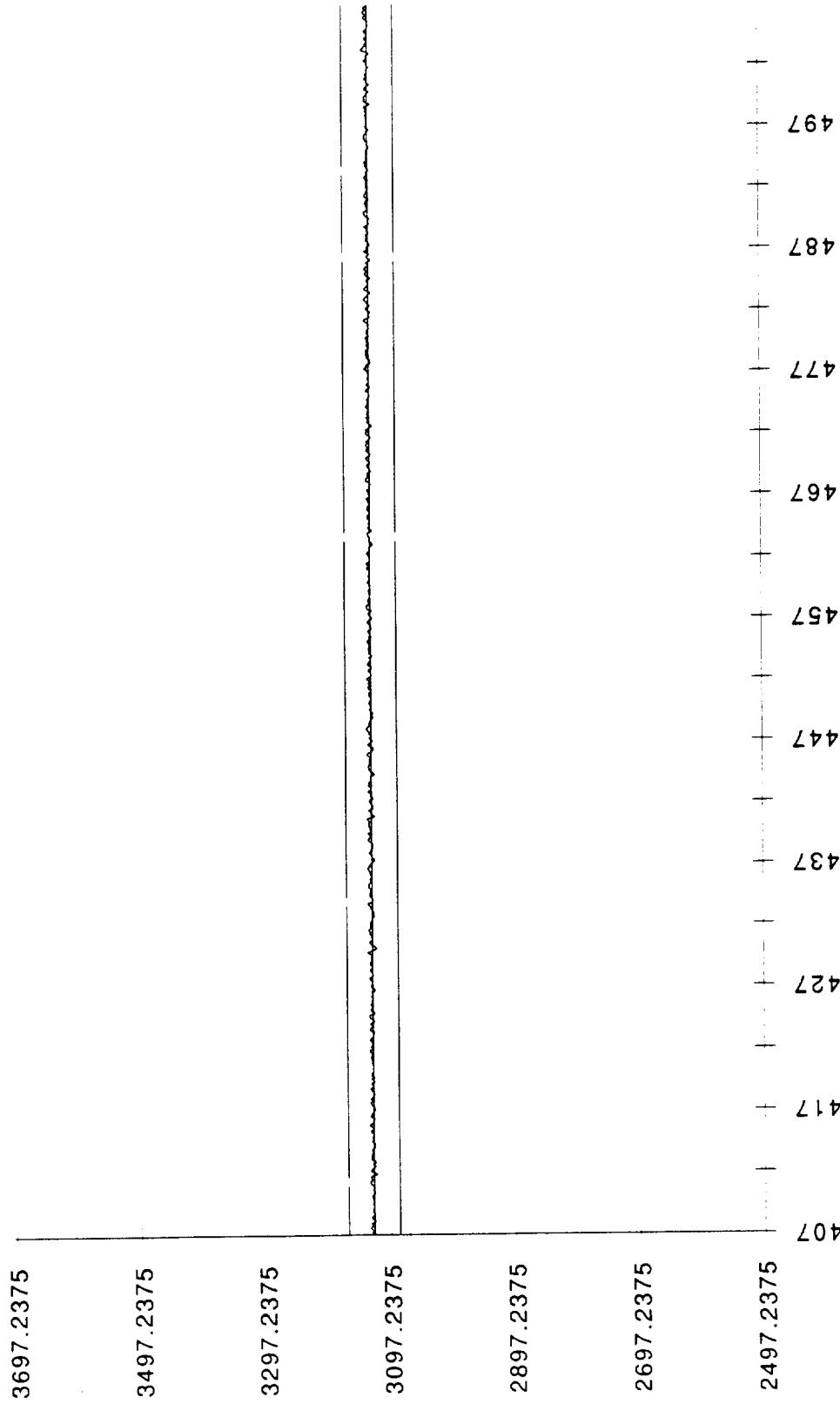
337

327

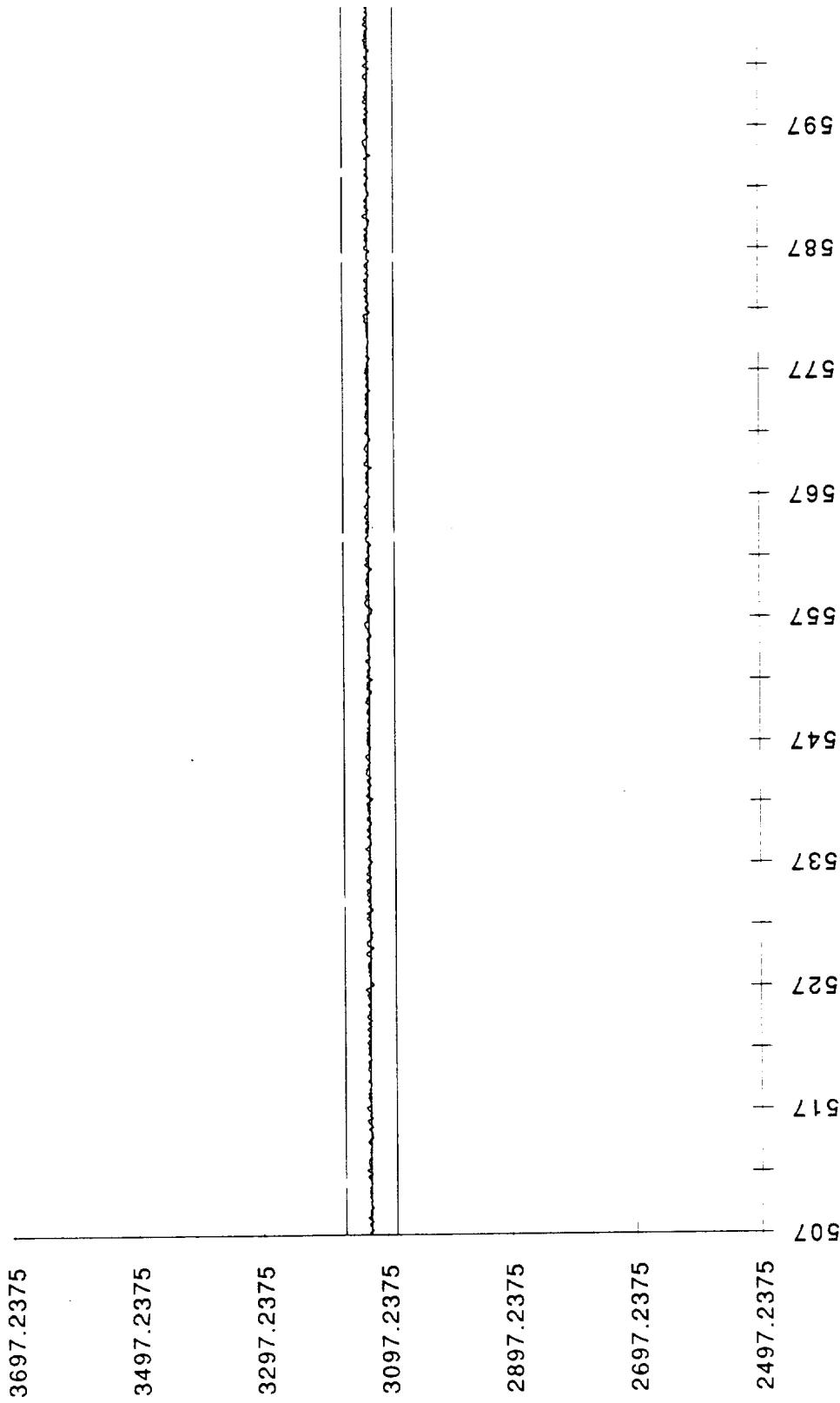
317

307

901-723 MCC PC.T

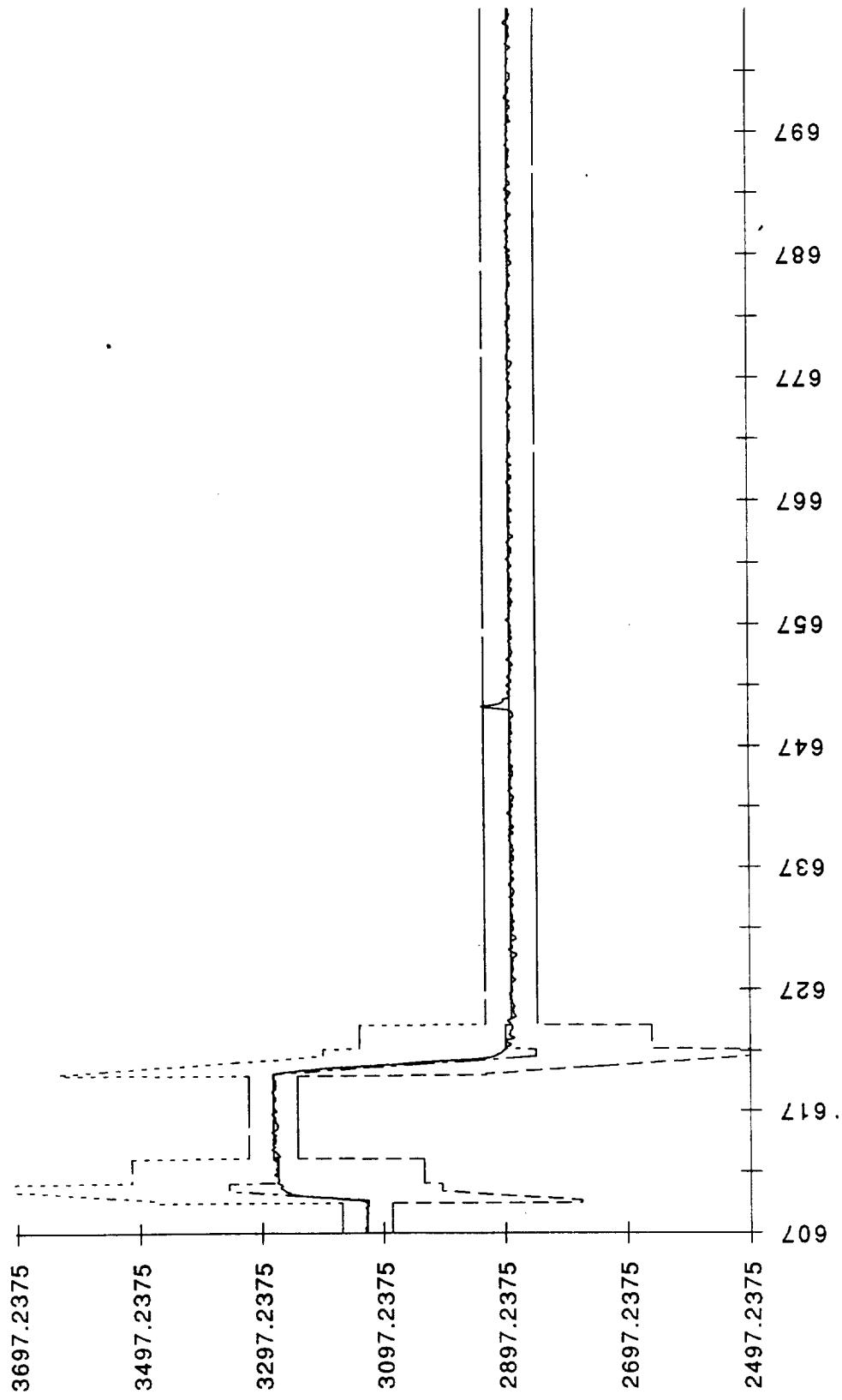


901-723 MCC PC.T

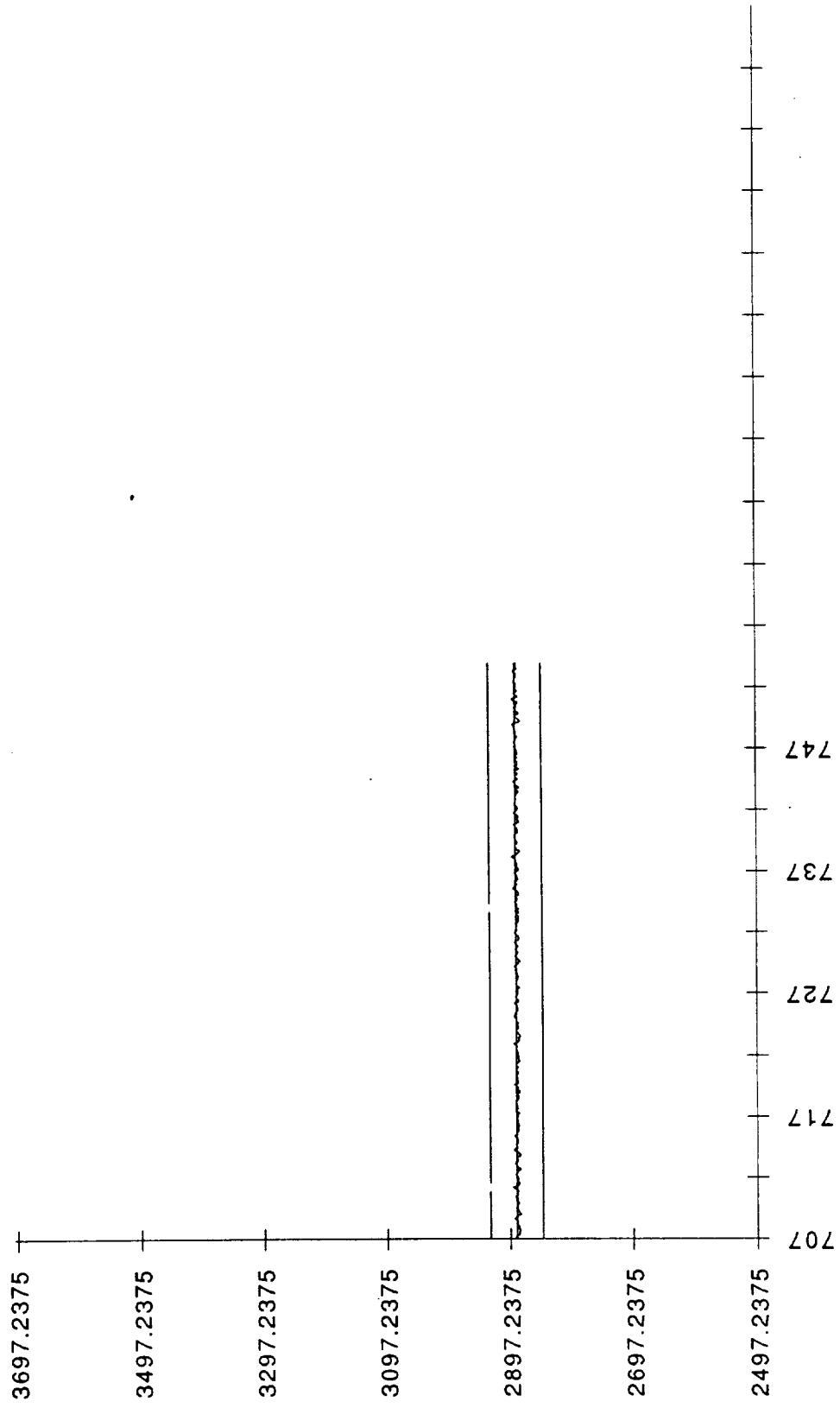


901-723 MCC Pg.T

901-723 MCC Pg.T

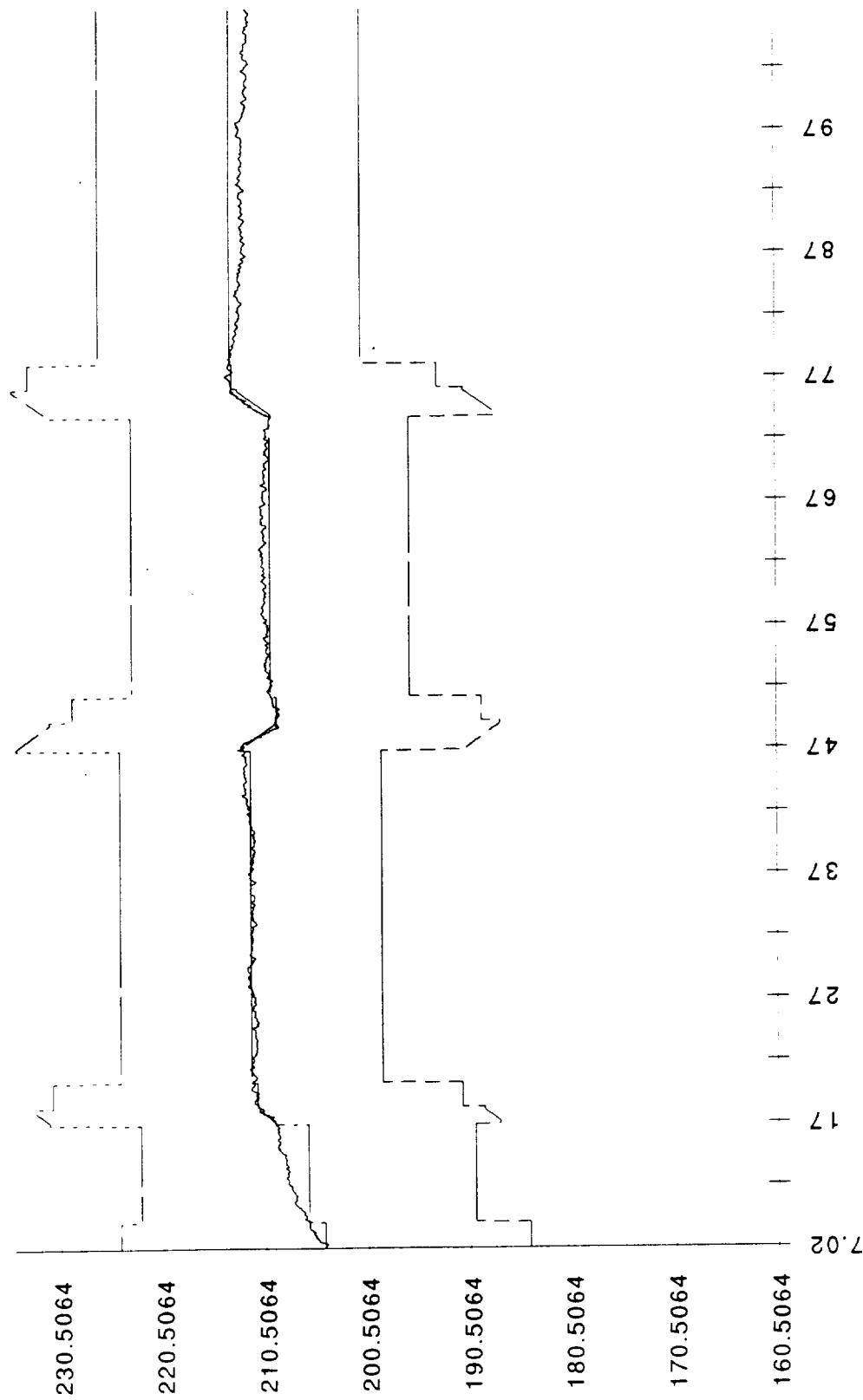


901-723 MCC P.C.T

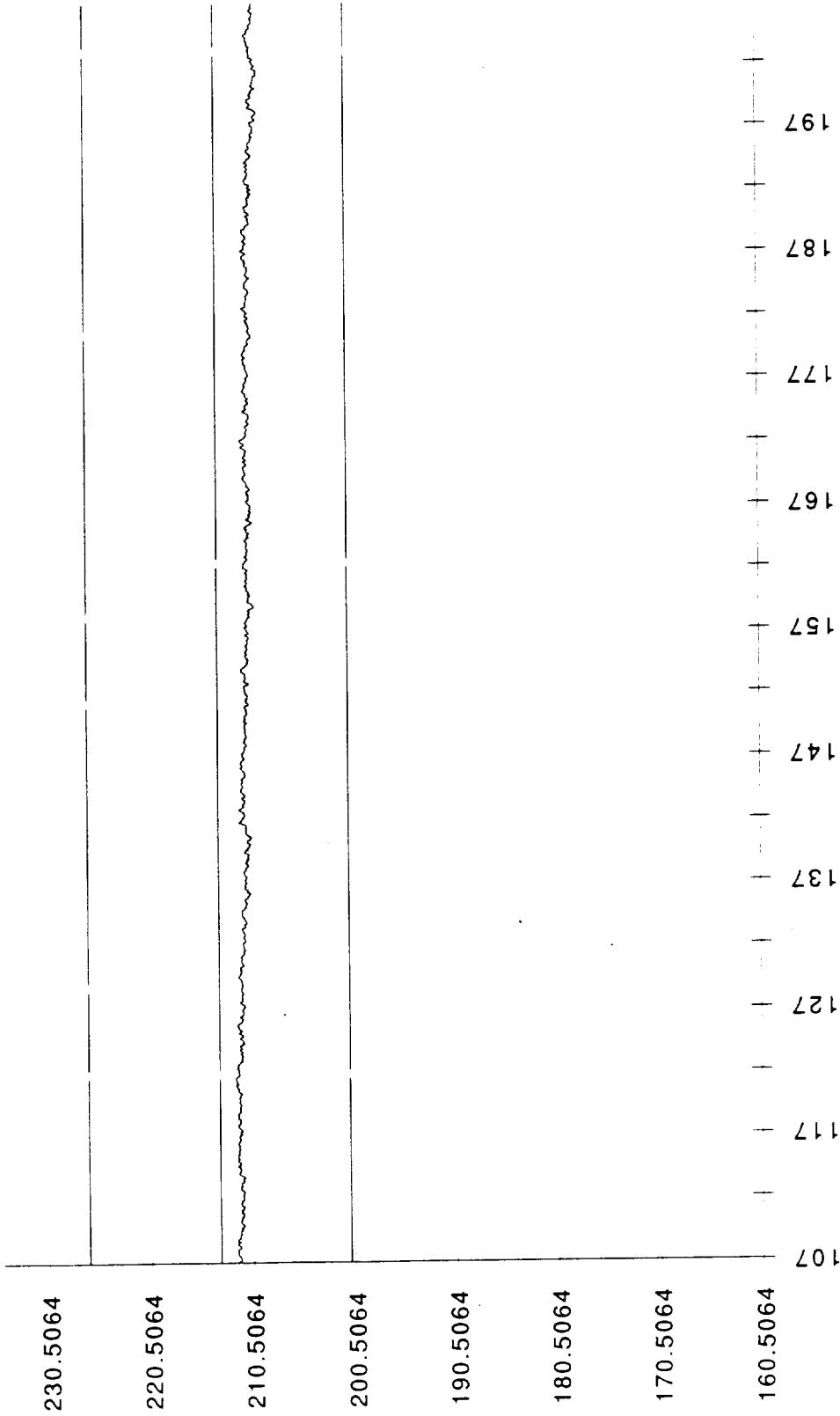


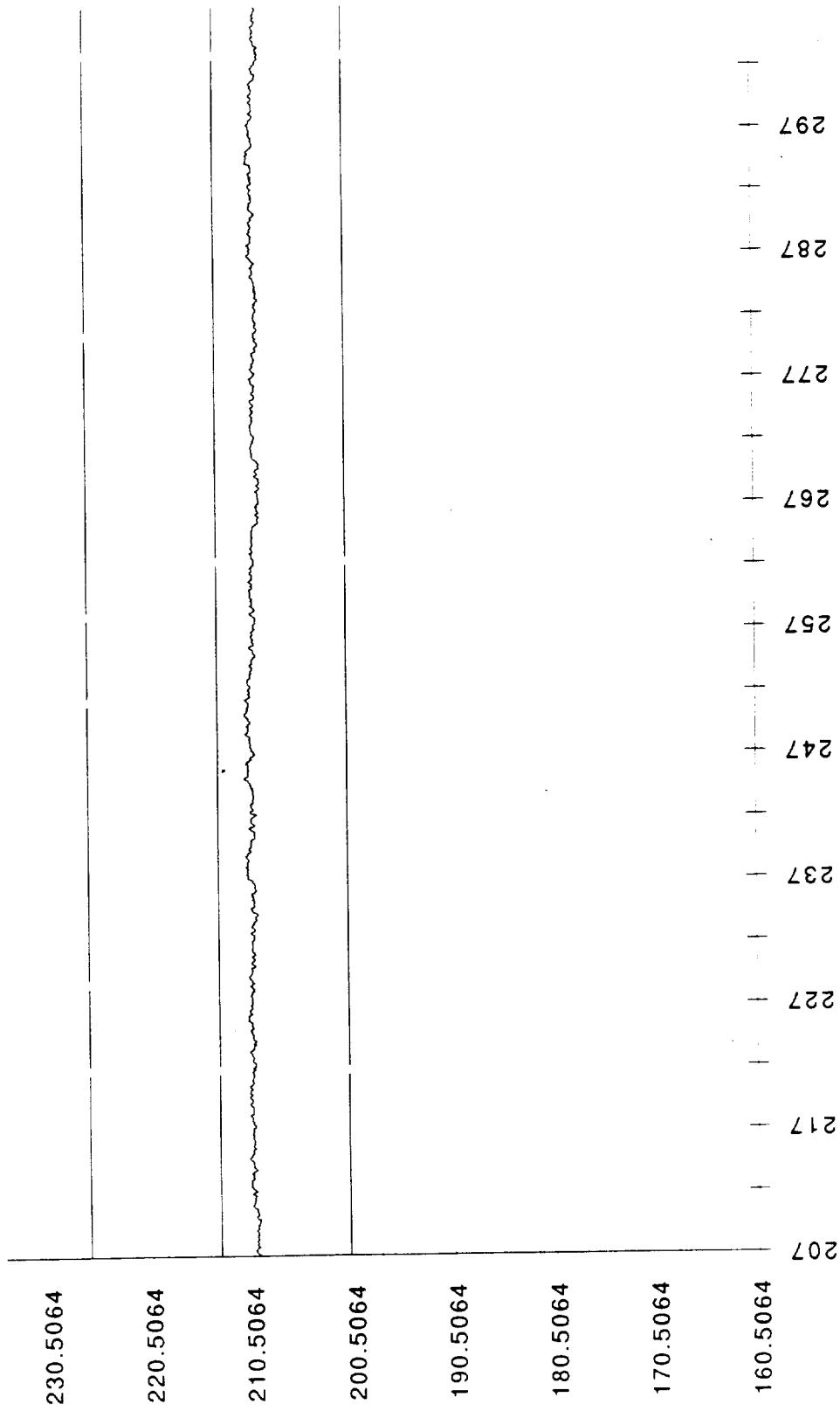
901-723 MCC P.C.T

901-772 HPOP IMSL pr.T

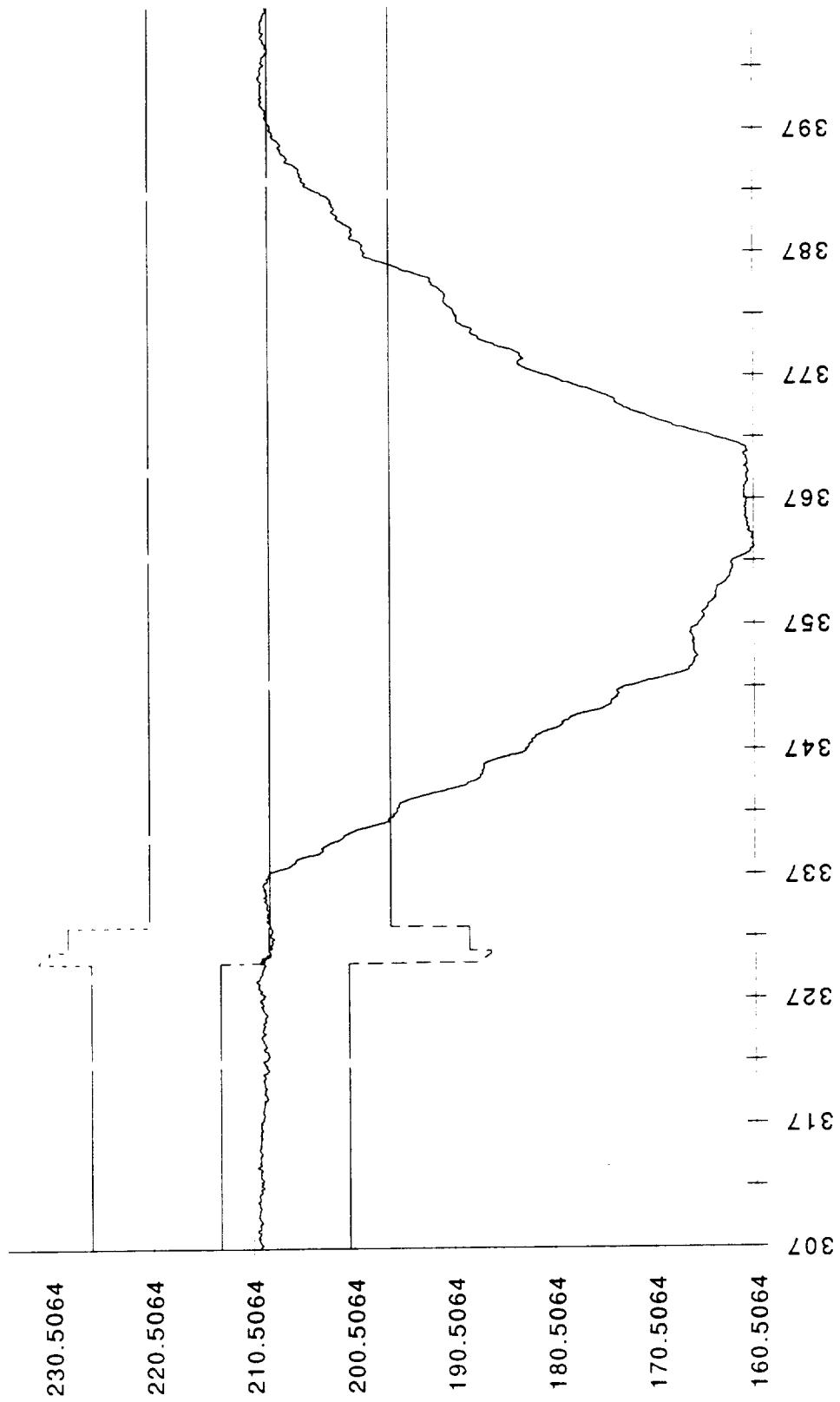


901-772 HPOP IMSL pr.T

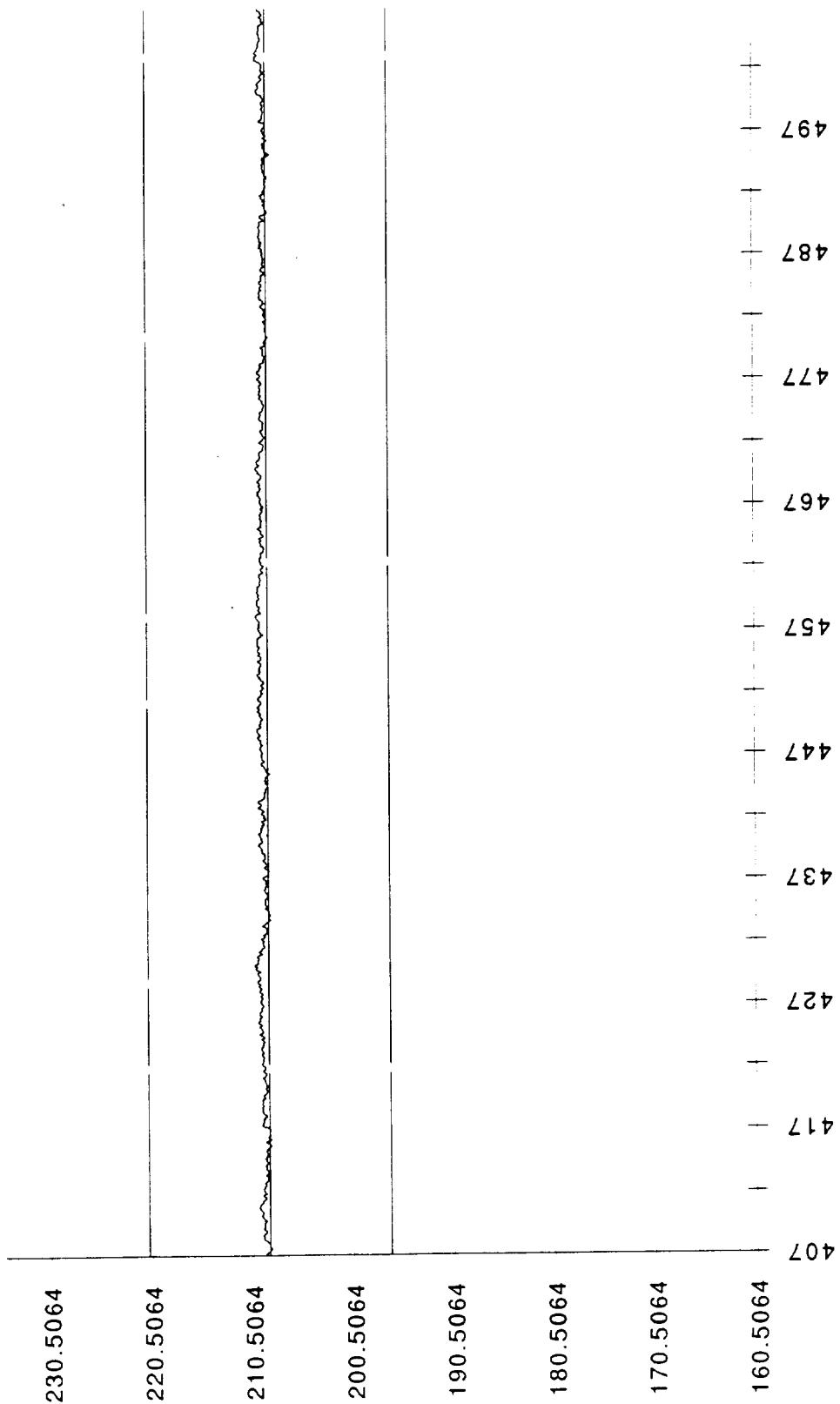


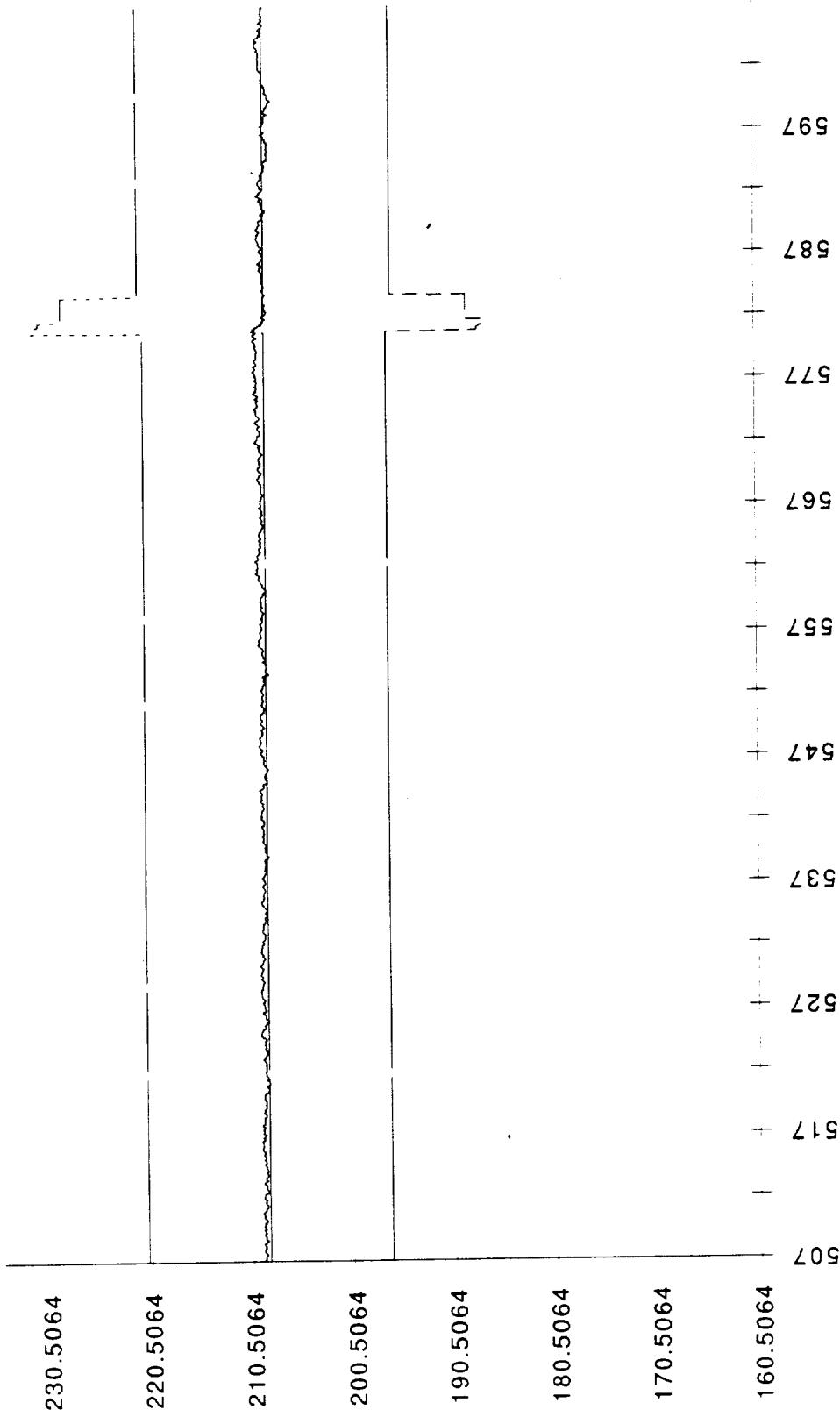


901-772 HPQP IMSL pr.T

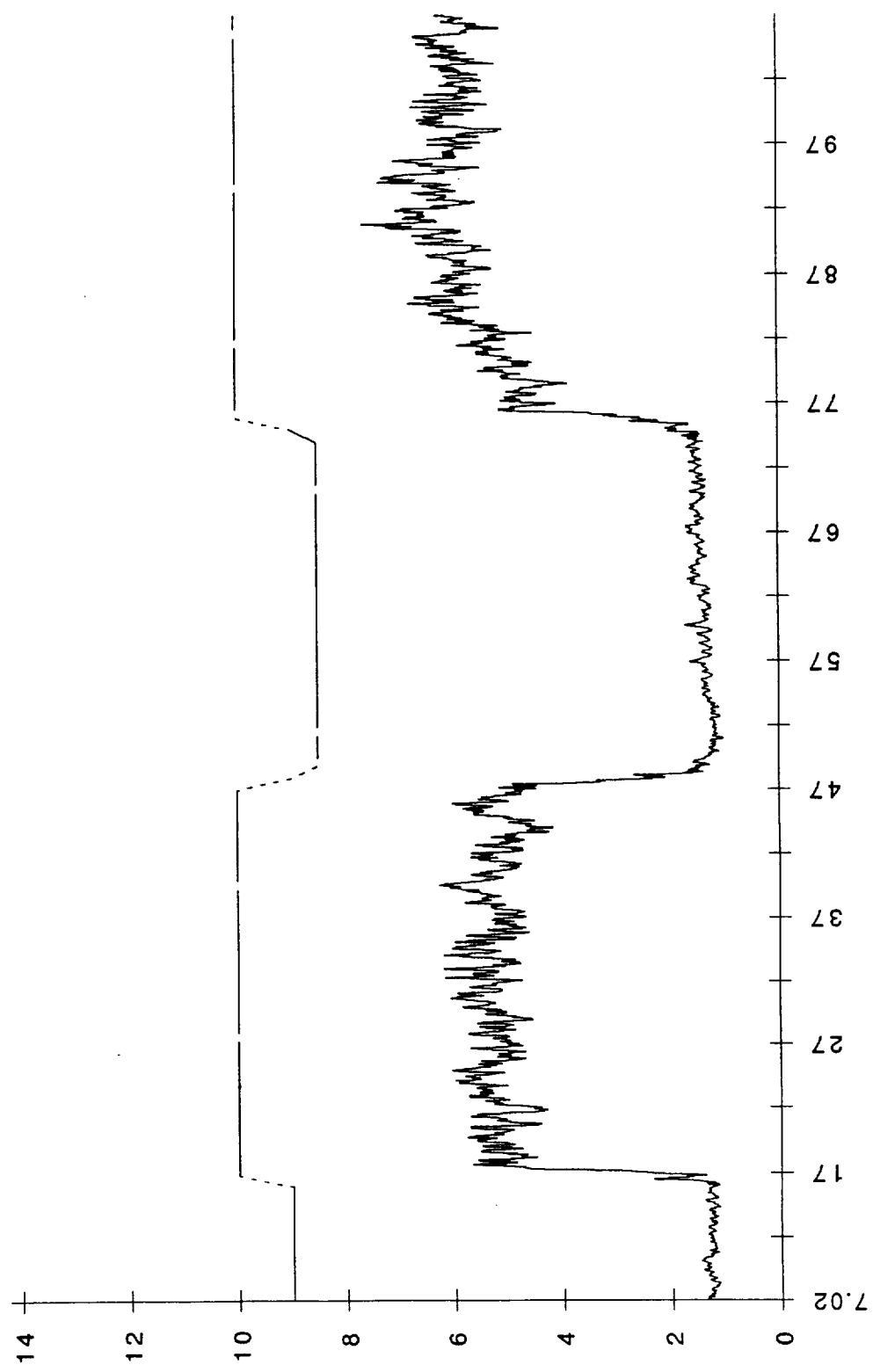


901-772 HPQP IMSL pr.T



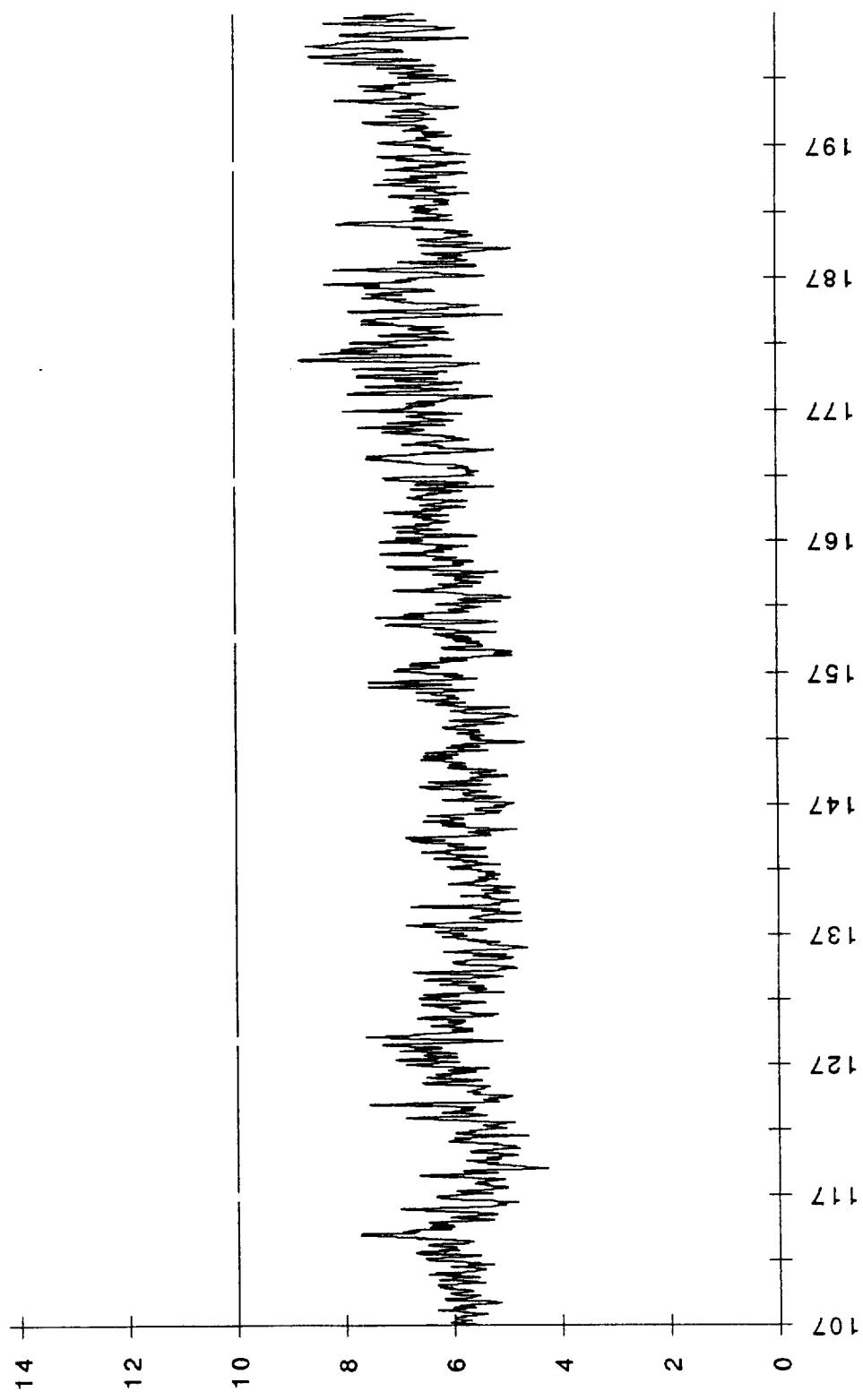


901-789 HPFP accel.T



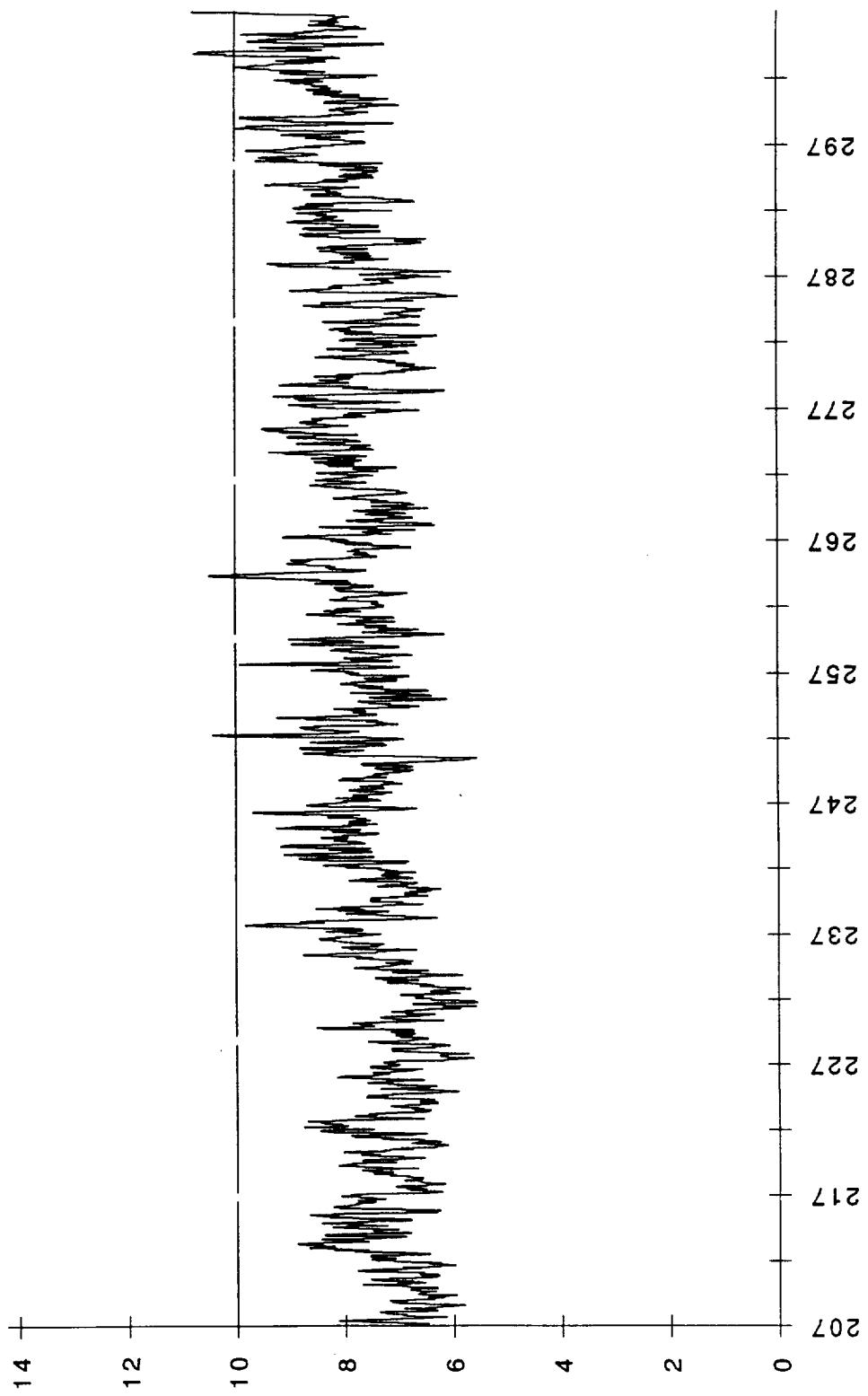
901-789 HPFP accel.T

901-789 HPFP accel.T



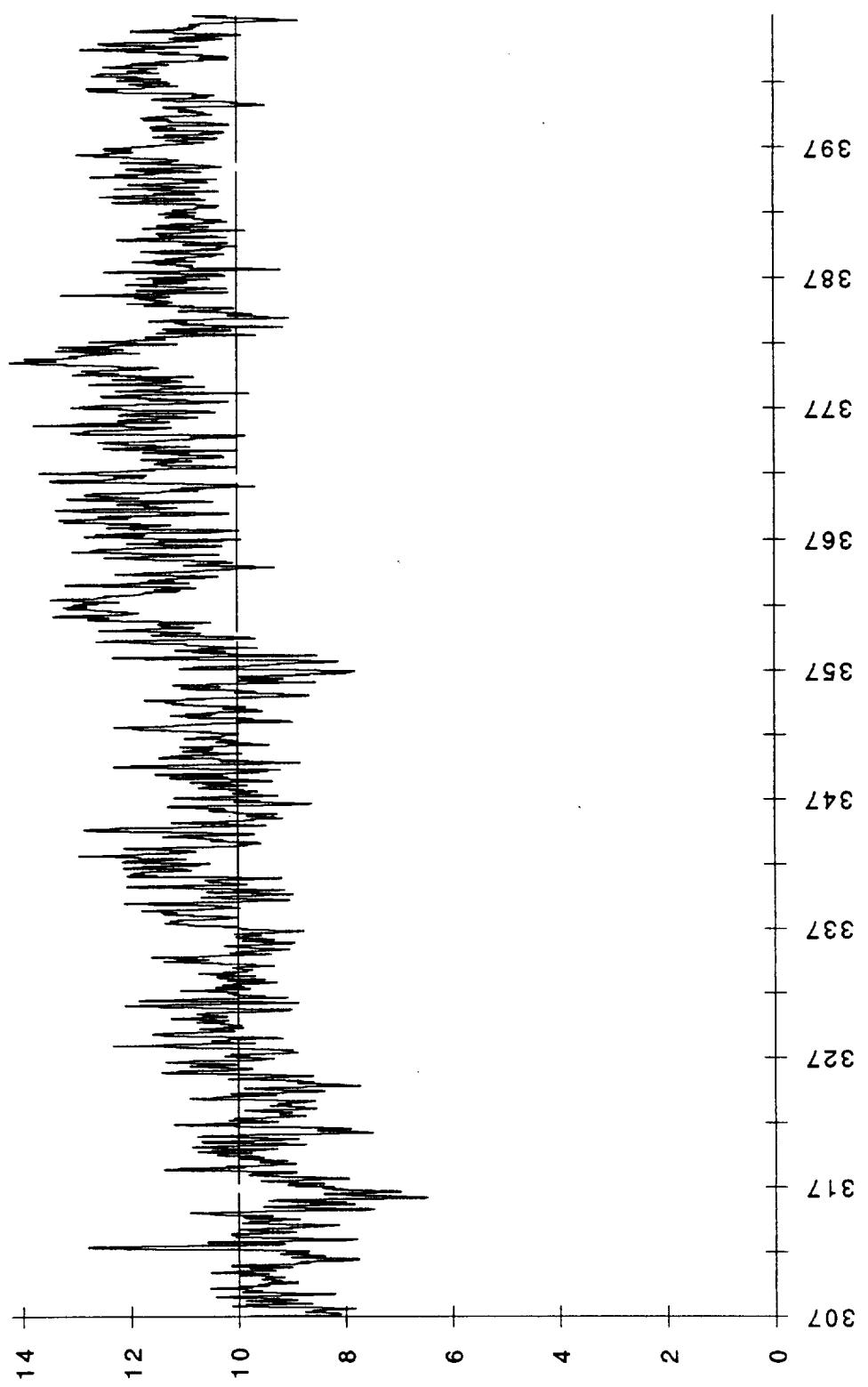
901-789 HPFP accel.T

901-789 HPFP accel.T



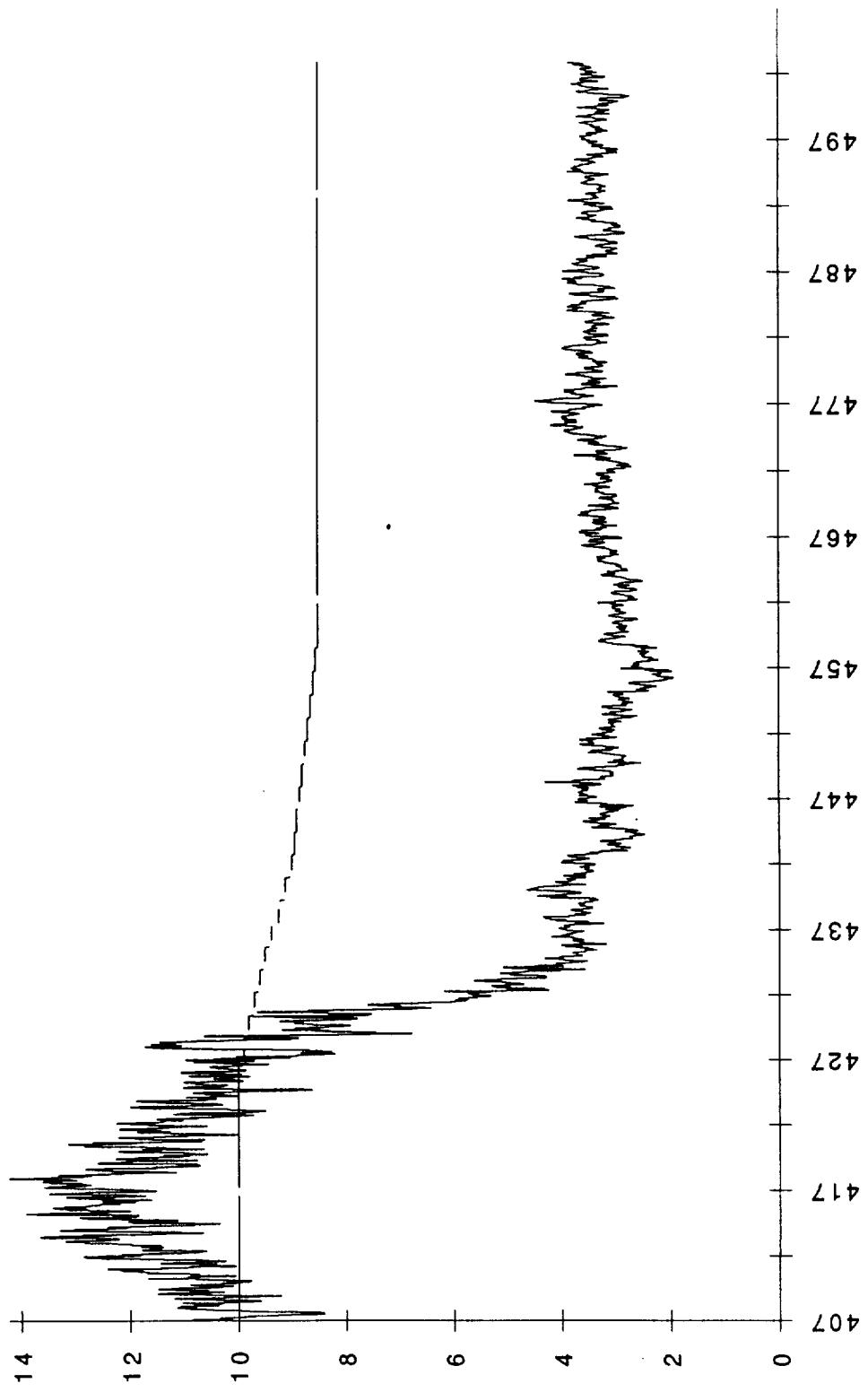
901-789 HPFP accel.T

901-789 HPFP accel.T



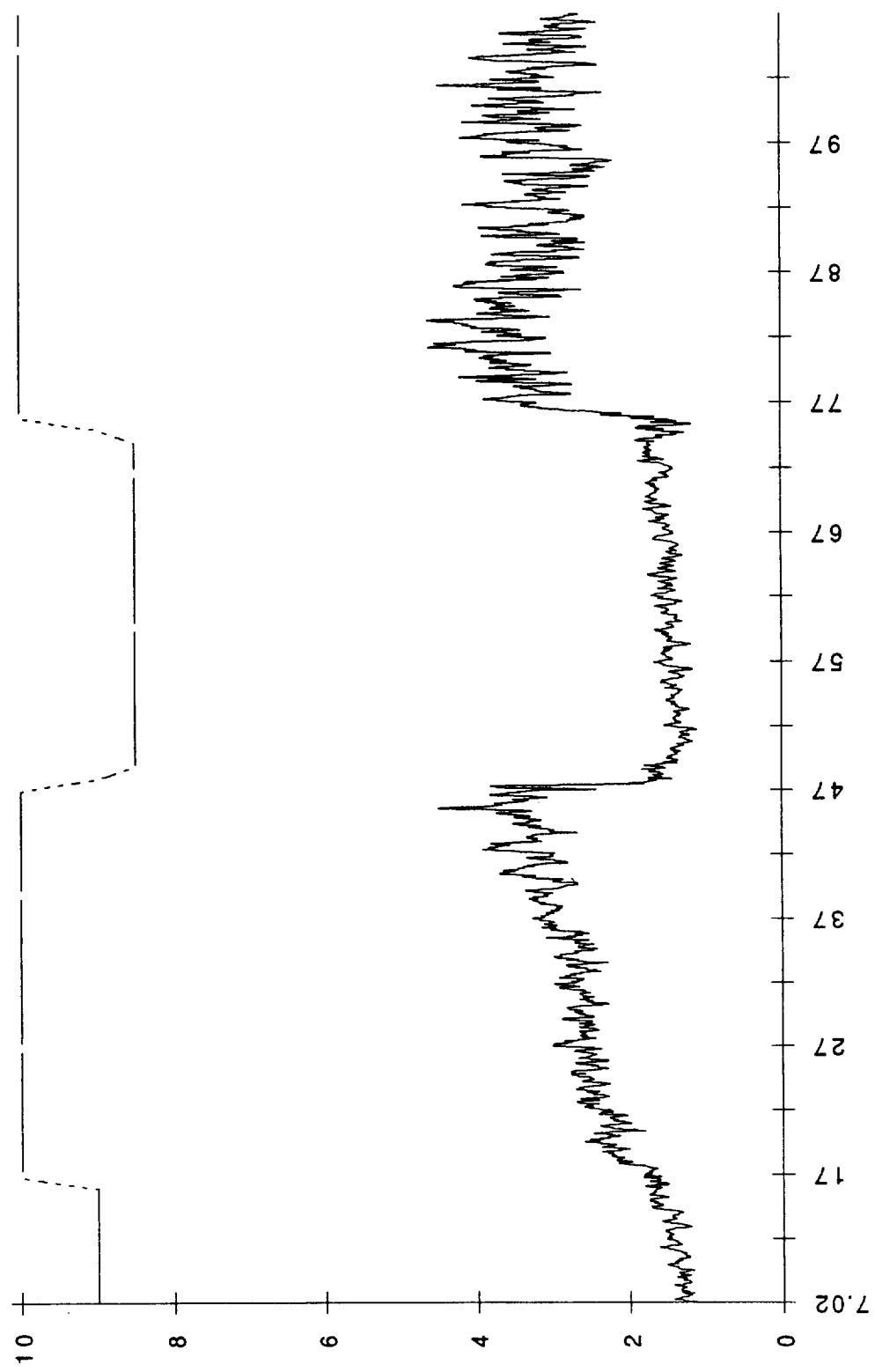
901-789 HPFP accel.T

901-789 HPFP accel.T



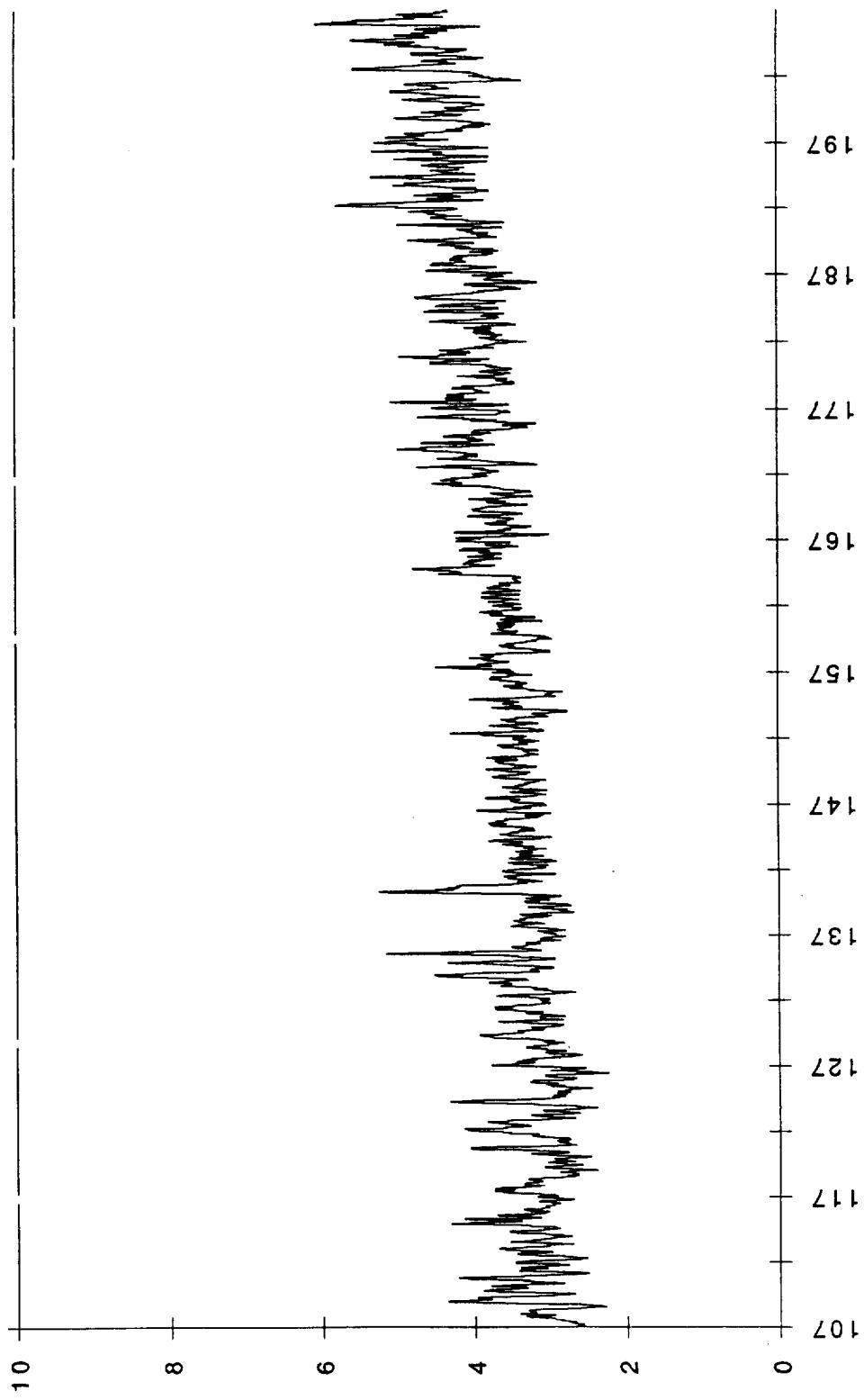
901-789 HPFP accel.T

901-809 HPFP accel.T



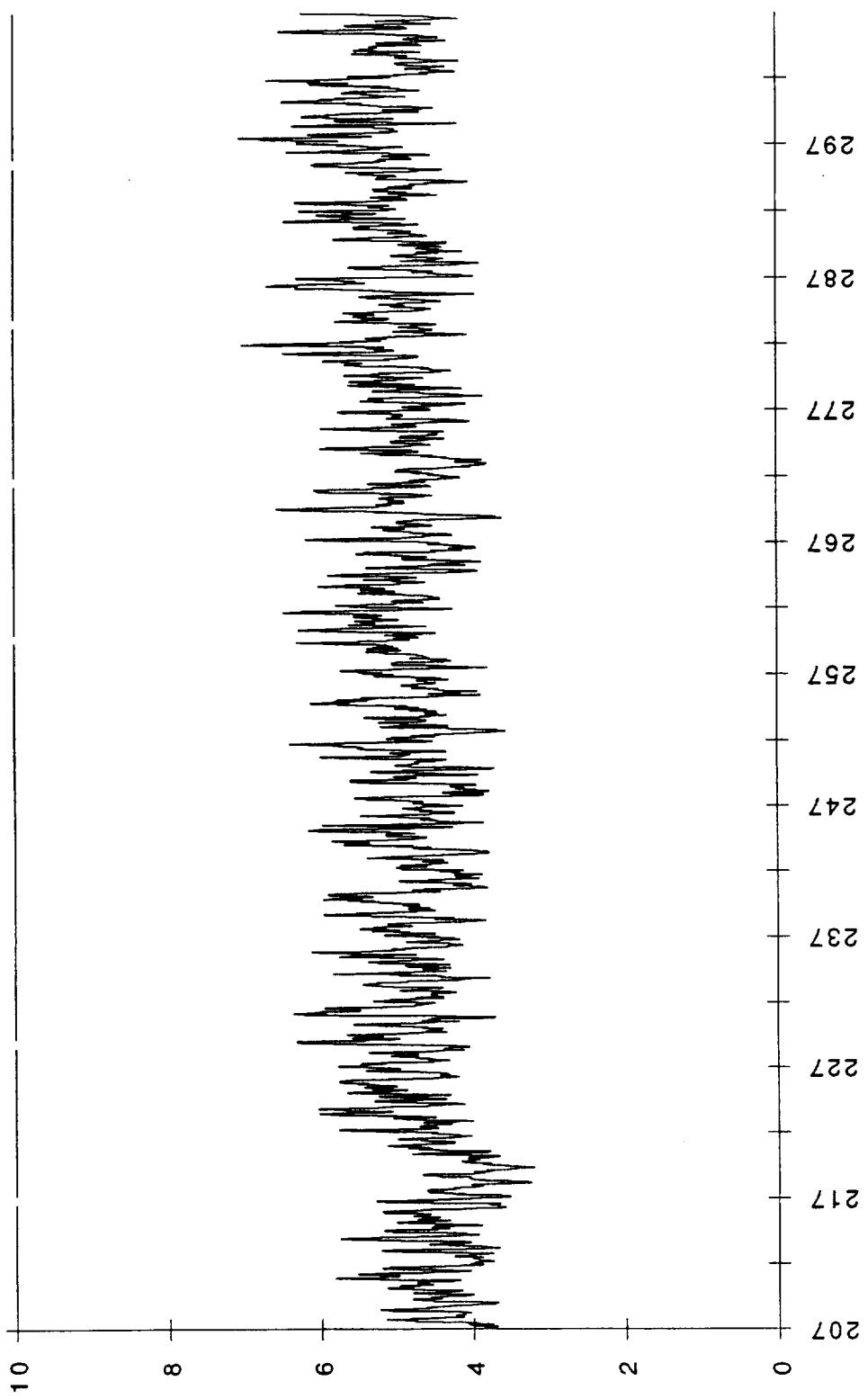
901-809 HPFP accel.T

901-809 HPFP accel.T



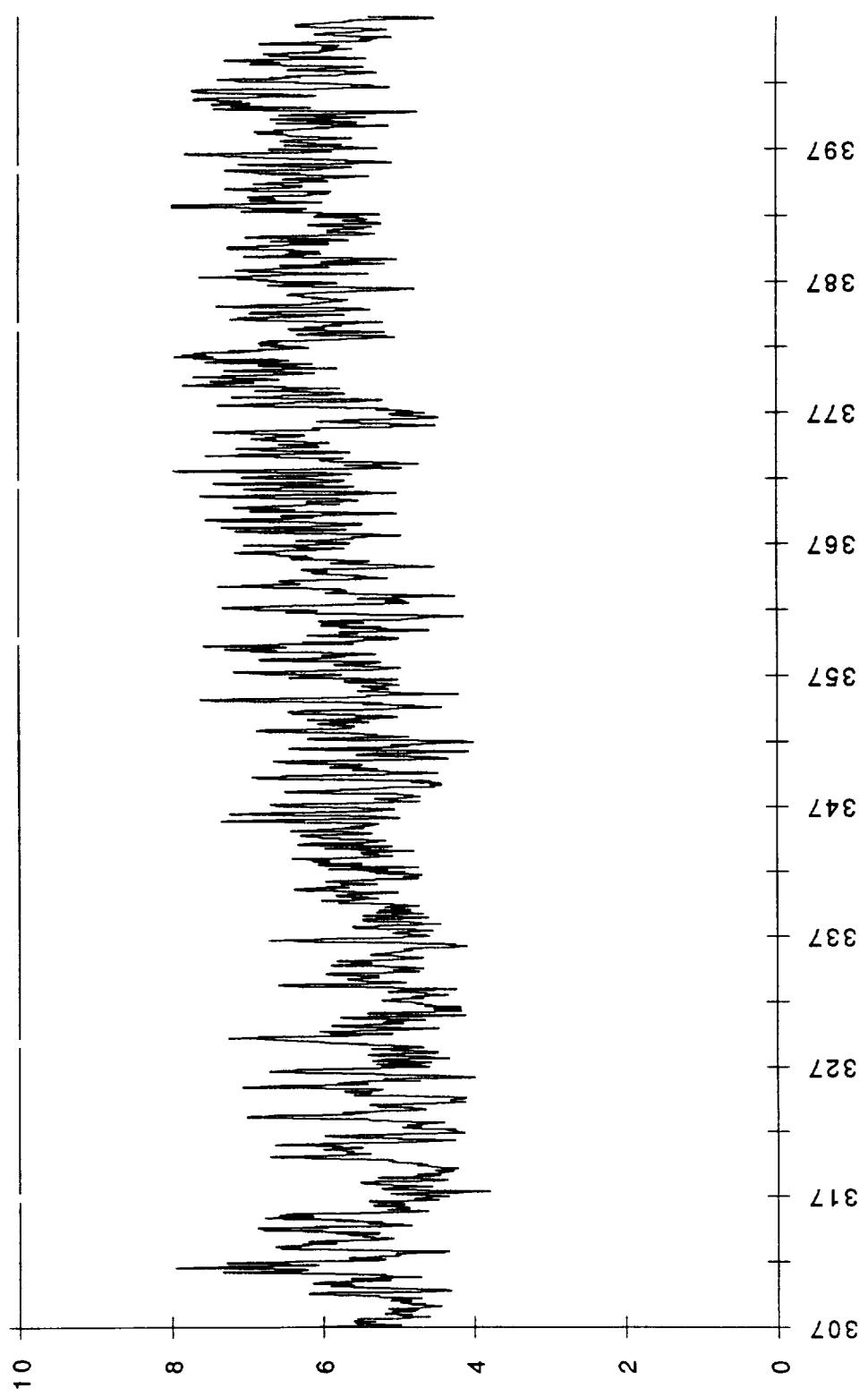
901-809 HPFP accel.T

901-809 HPFP accel.T



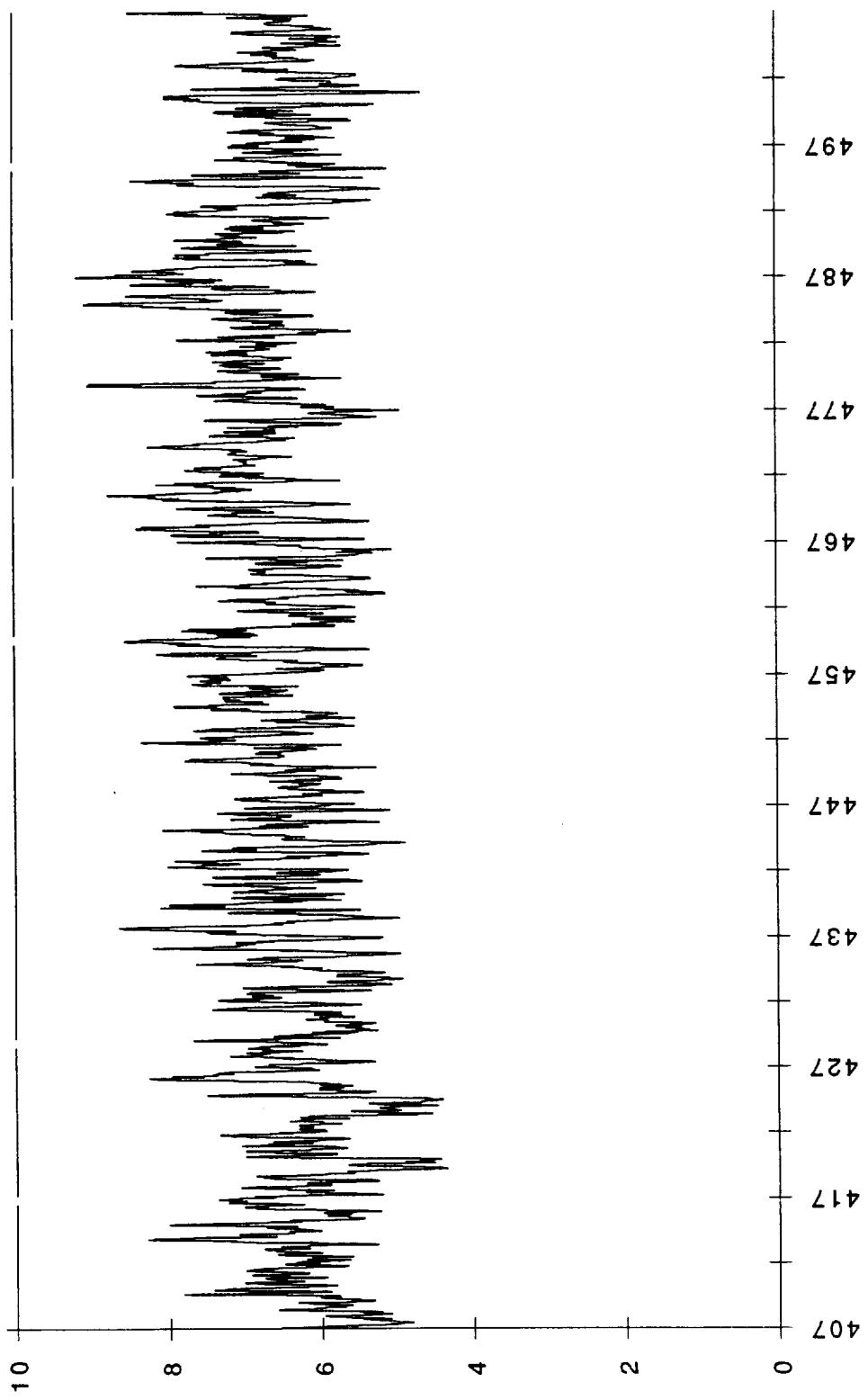
901-809 HPFP accel.T

901-809 HPFP accel.T



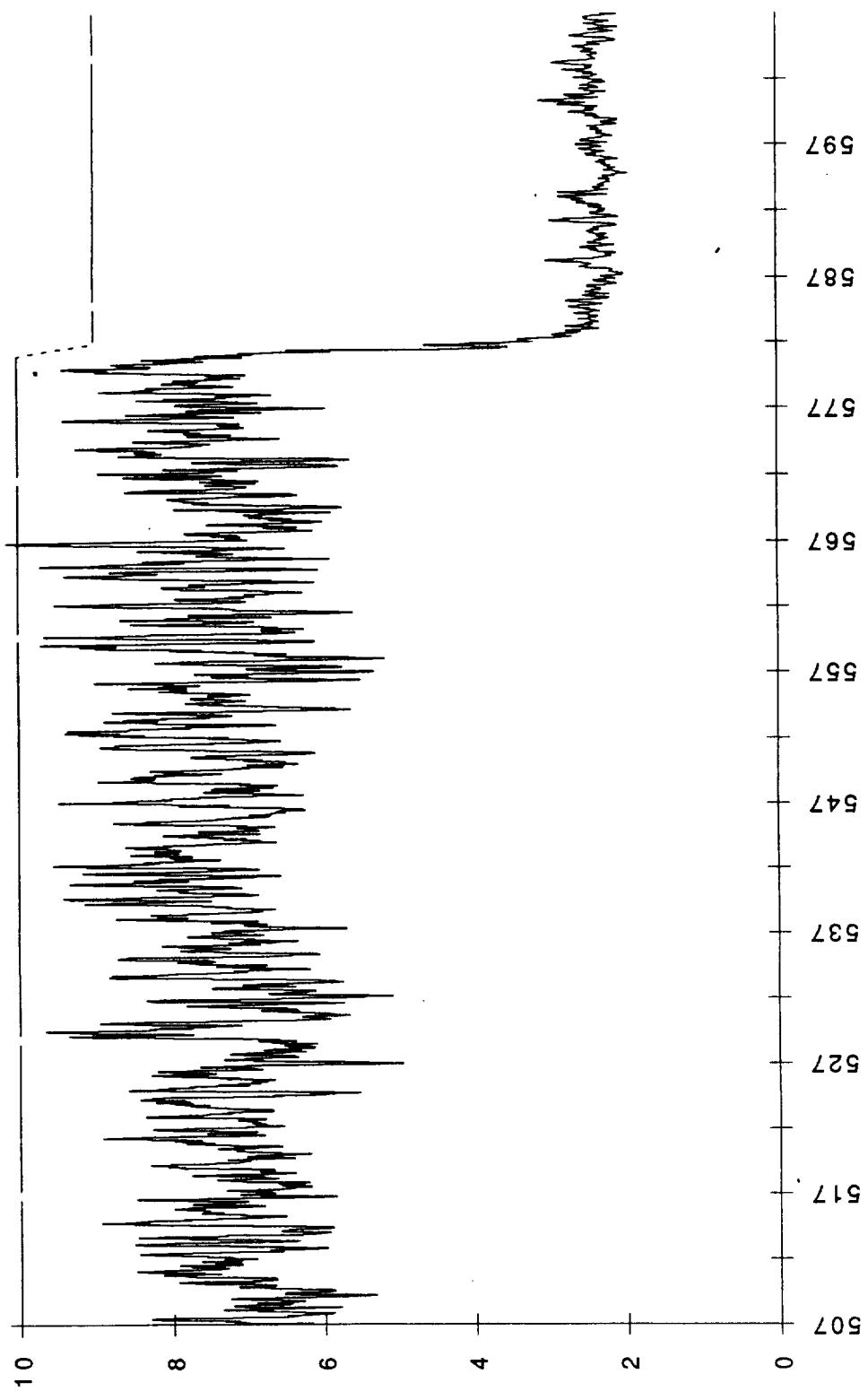
901-809 HPFP accel.T

901-809 HPFP accel.T



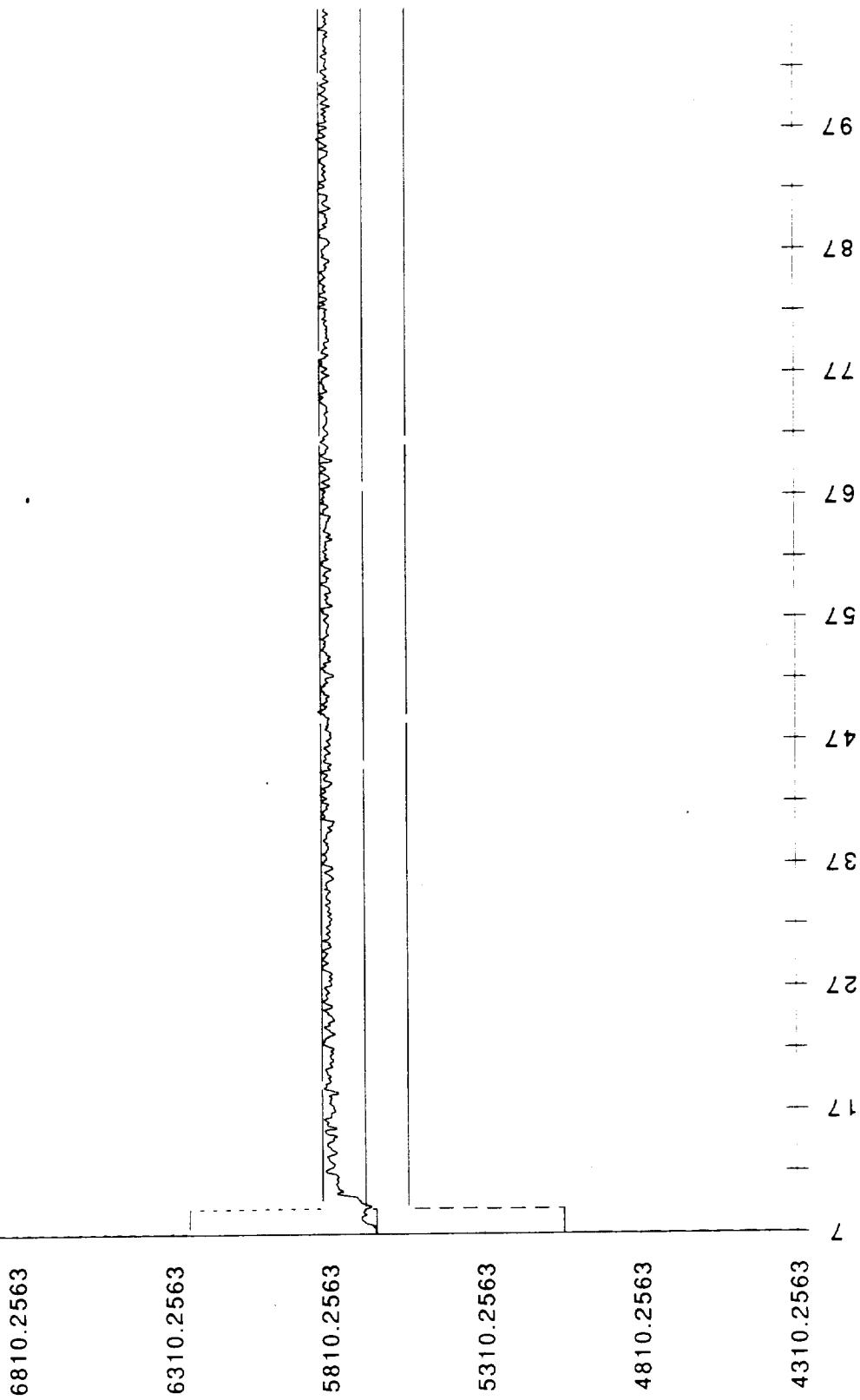
901-809 HPFP accel.T

901-809 HPFP accel.T



901-809 HPFP accel.T

901-816 HPFP dis pr.T



901-816 HPFP dis pr.T

901-816 HPFP dis pr.T



901-816 HPFP dis pr.T

901-816 HPFP dis pr.T

6810.2563

6310.2563

5810.2563

5310.2563

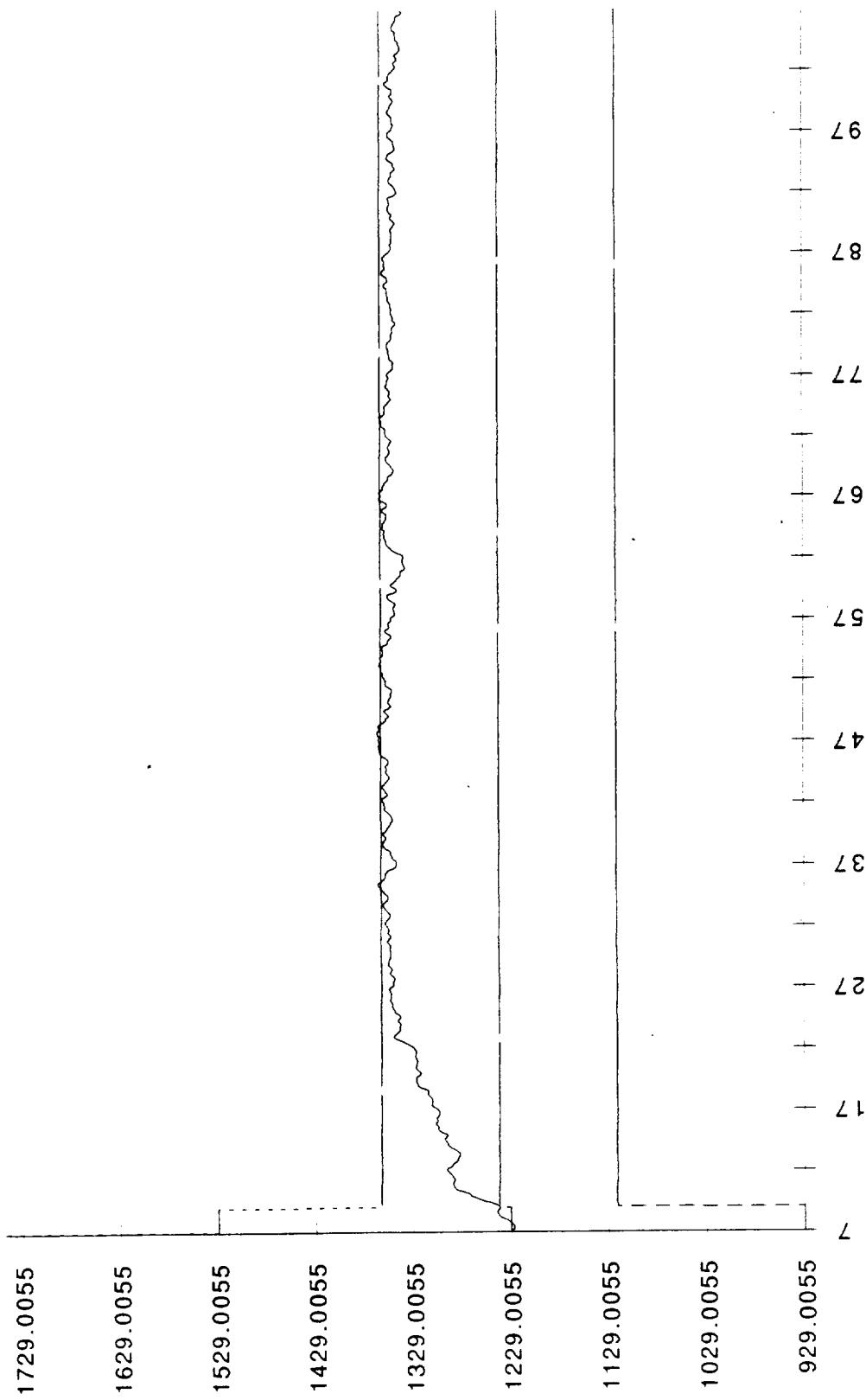
4810.2563

4310.2563

207

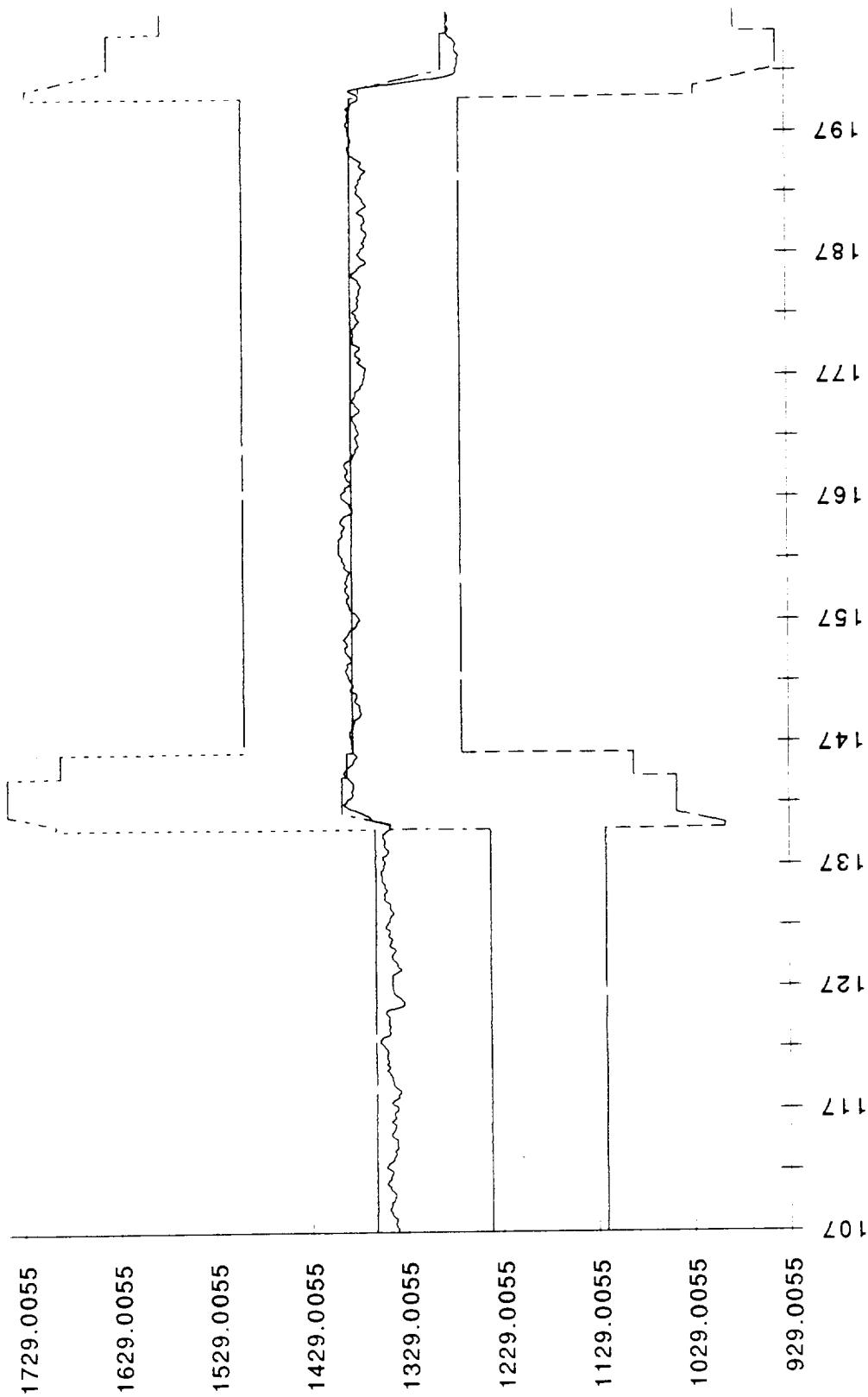
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901-816 HPOP TDT B.T



901-816 HPOP TDT B.T

901-816 HPOP TDT B.T



901-816 HPOP TDT B.T

901-816 HPOP TDT B.T

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1629.0055

1529.0055

1429.0055

1329.0055

1229.0055

1129.0055

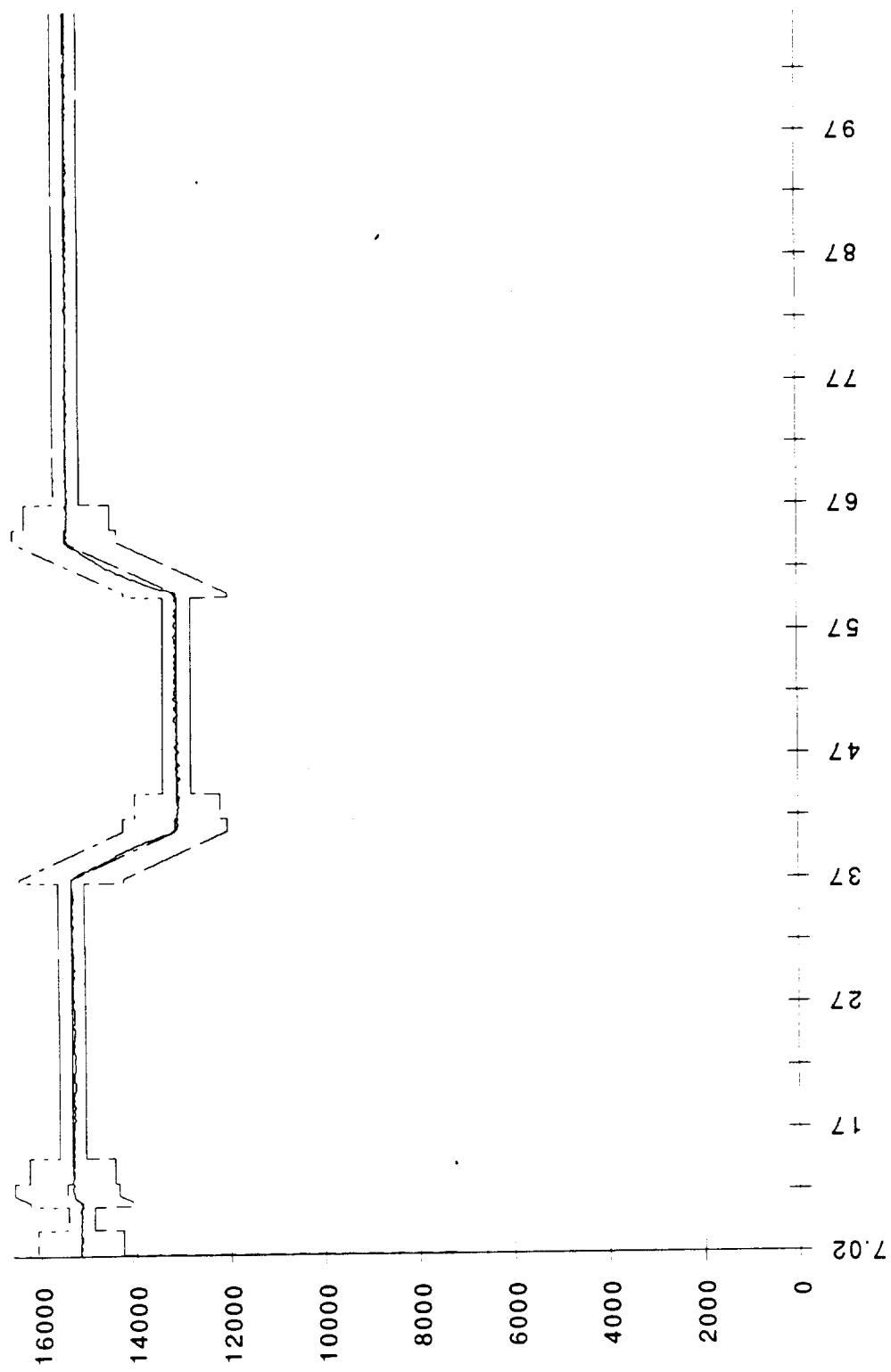
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929.0055

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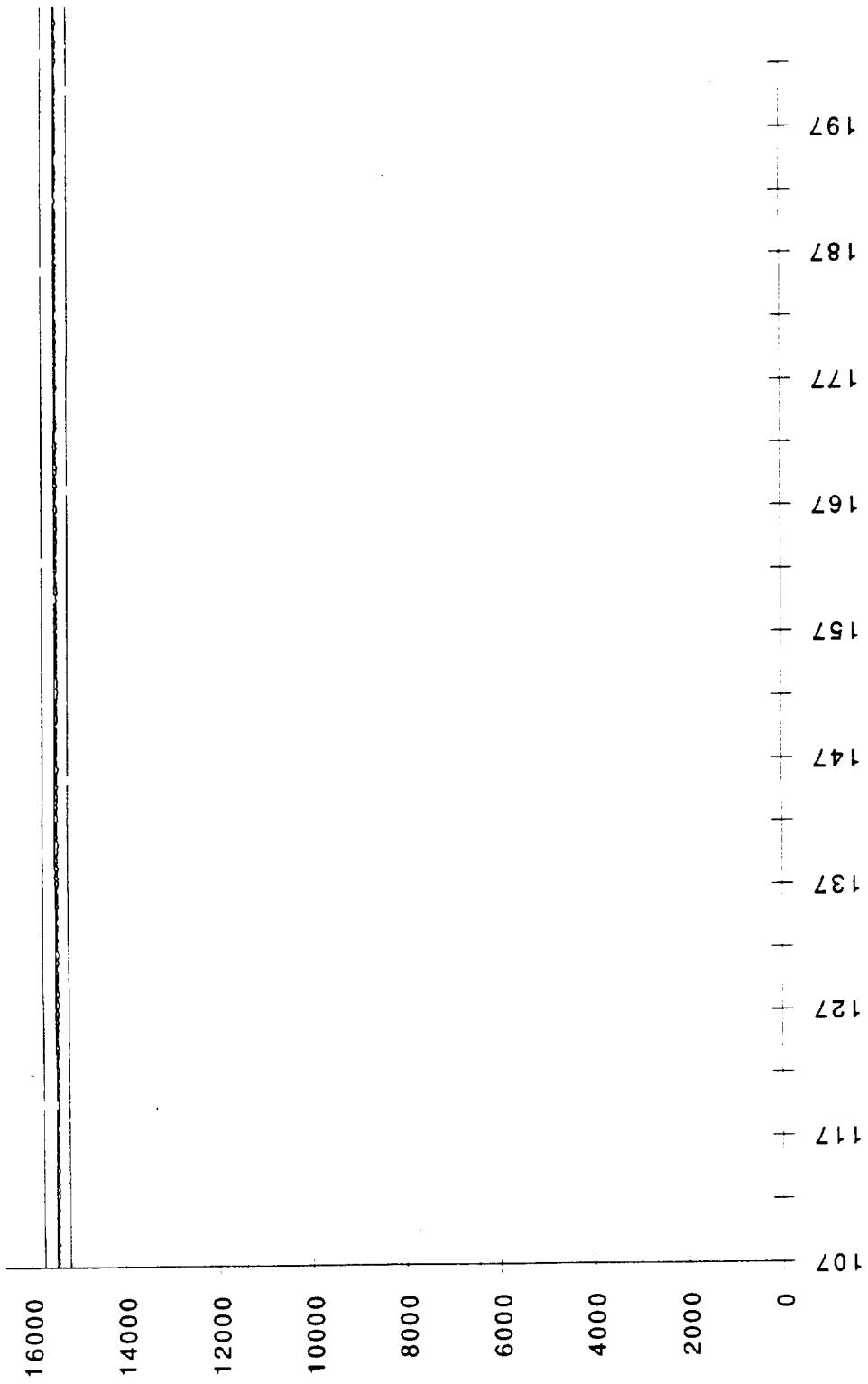
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904-196 LPFP sh sp.T



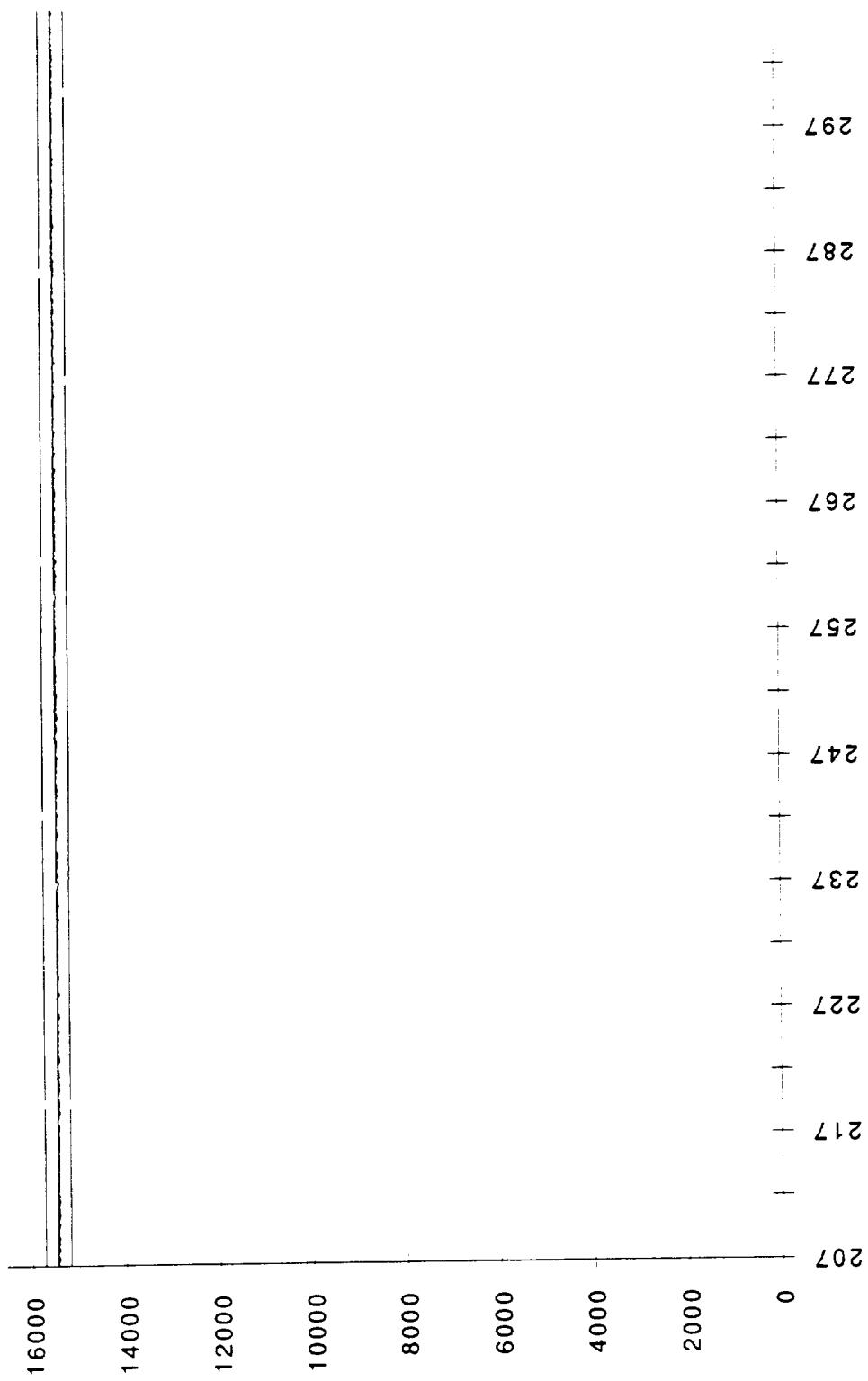
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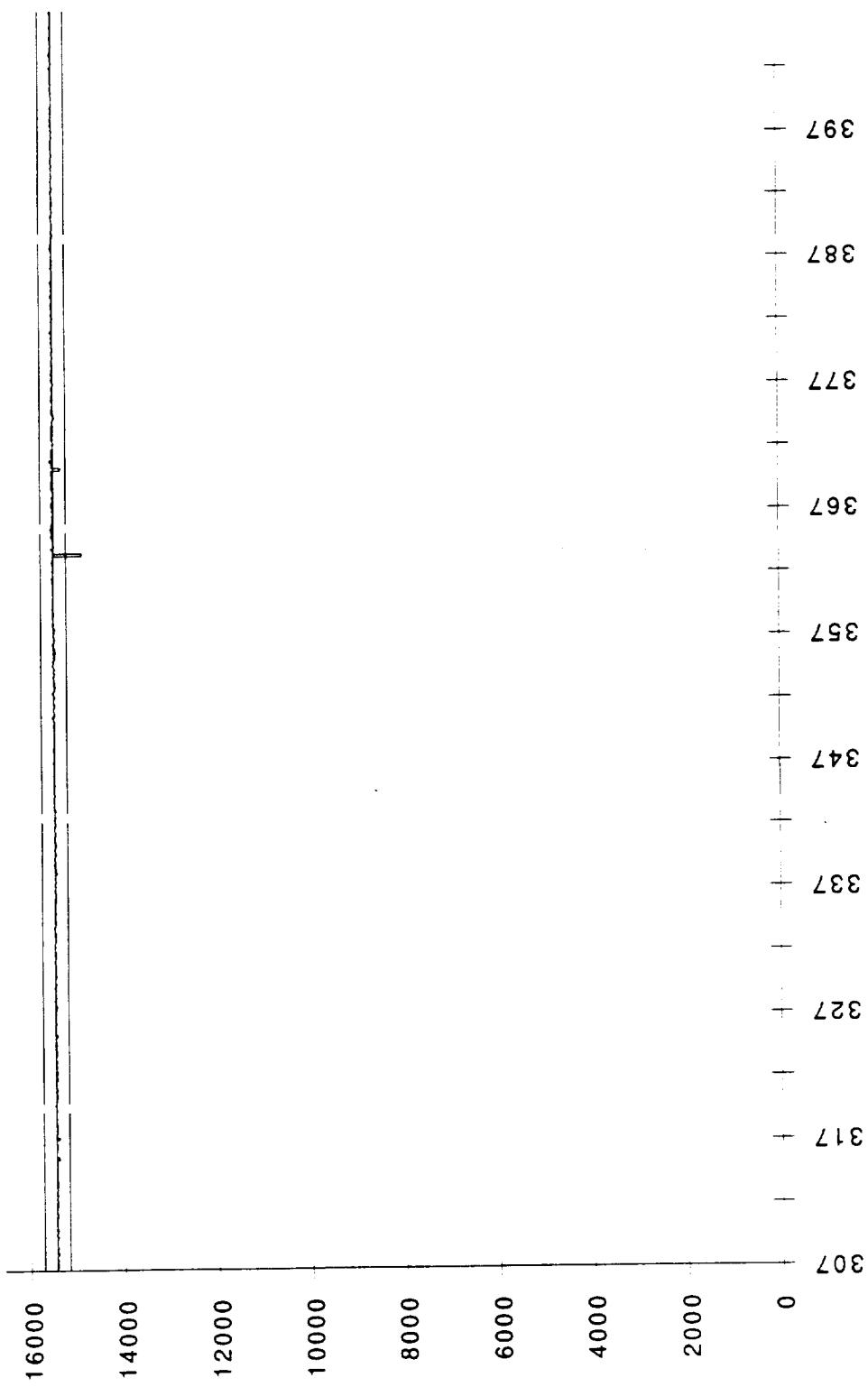
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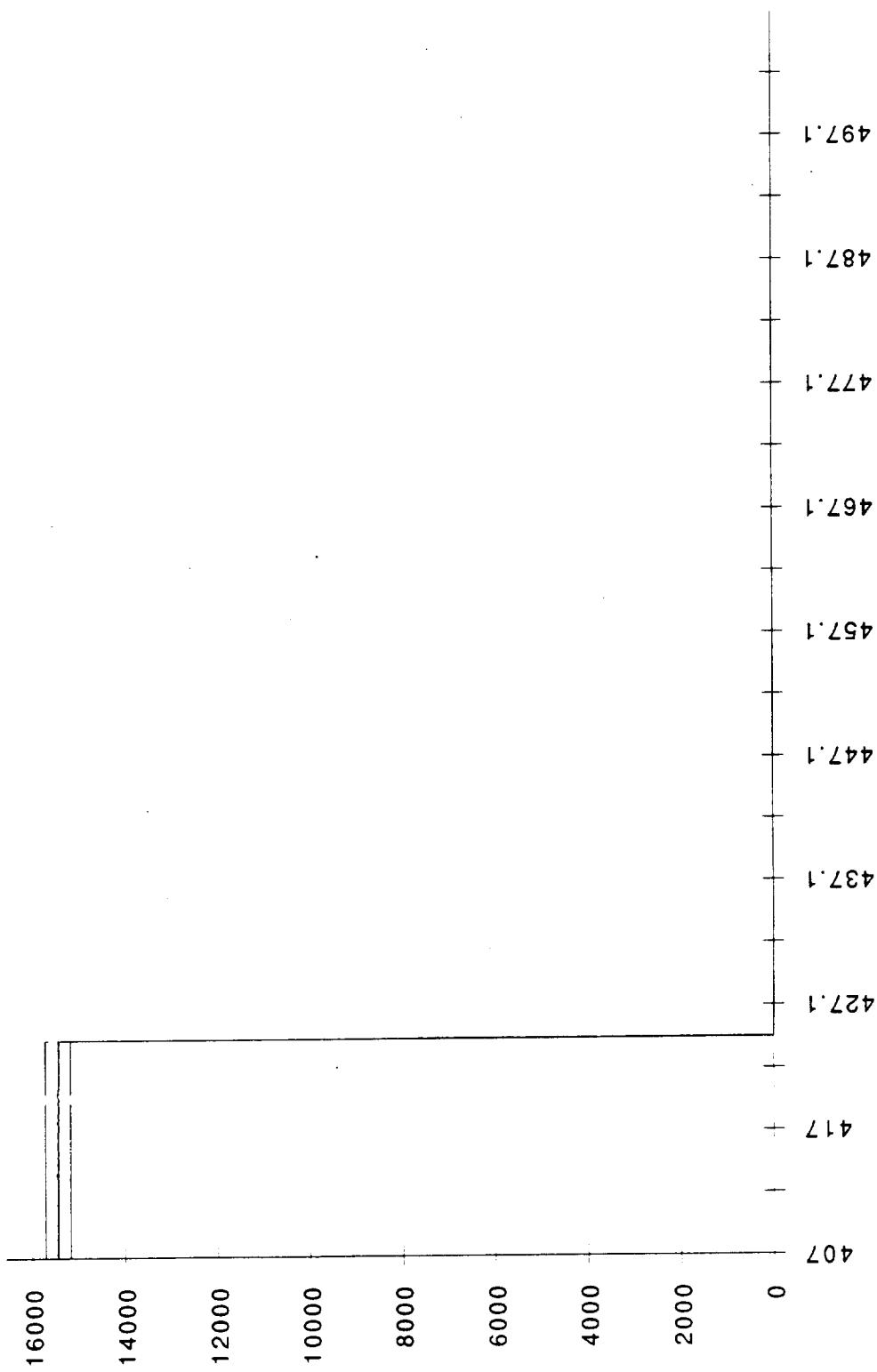
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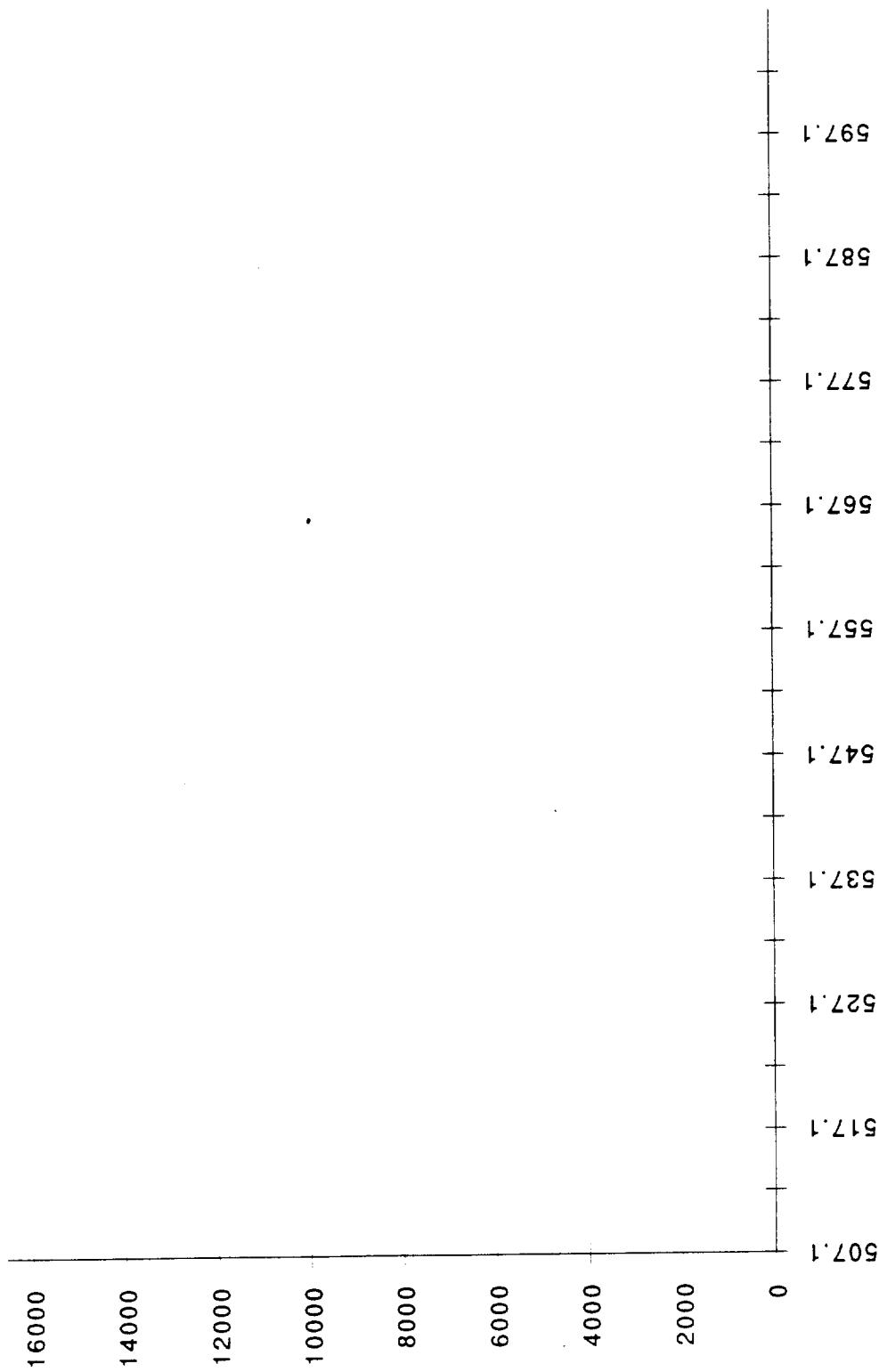
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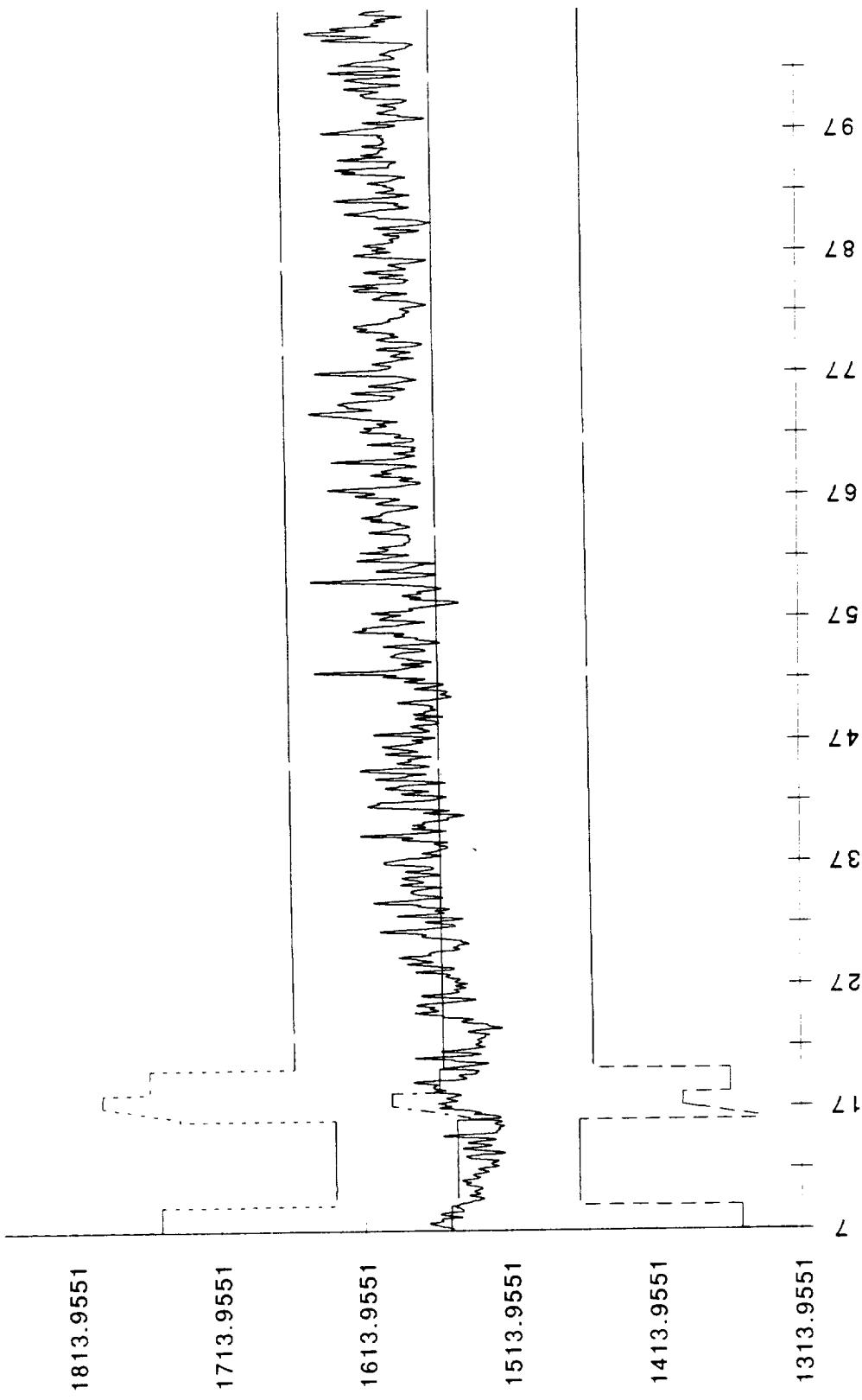
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904-201 HPFP TDT A.T



904-201 HPFP TDT A.T

904-201 HPFP TDT A.T

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197

187

177

167

157

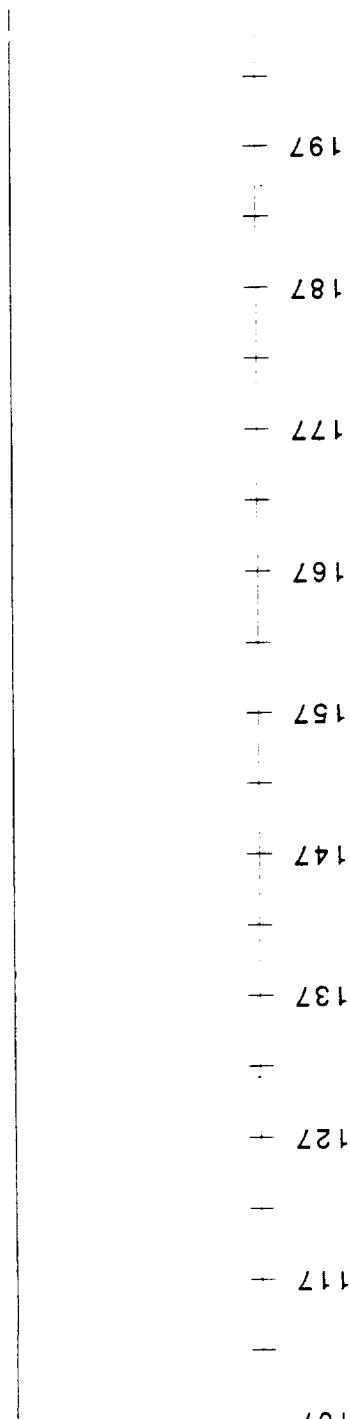
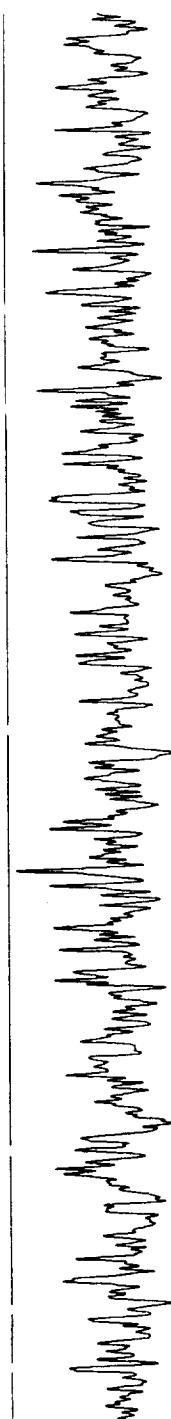
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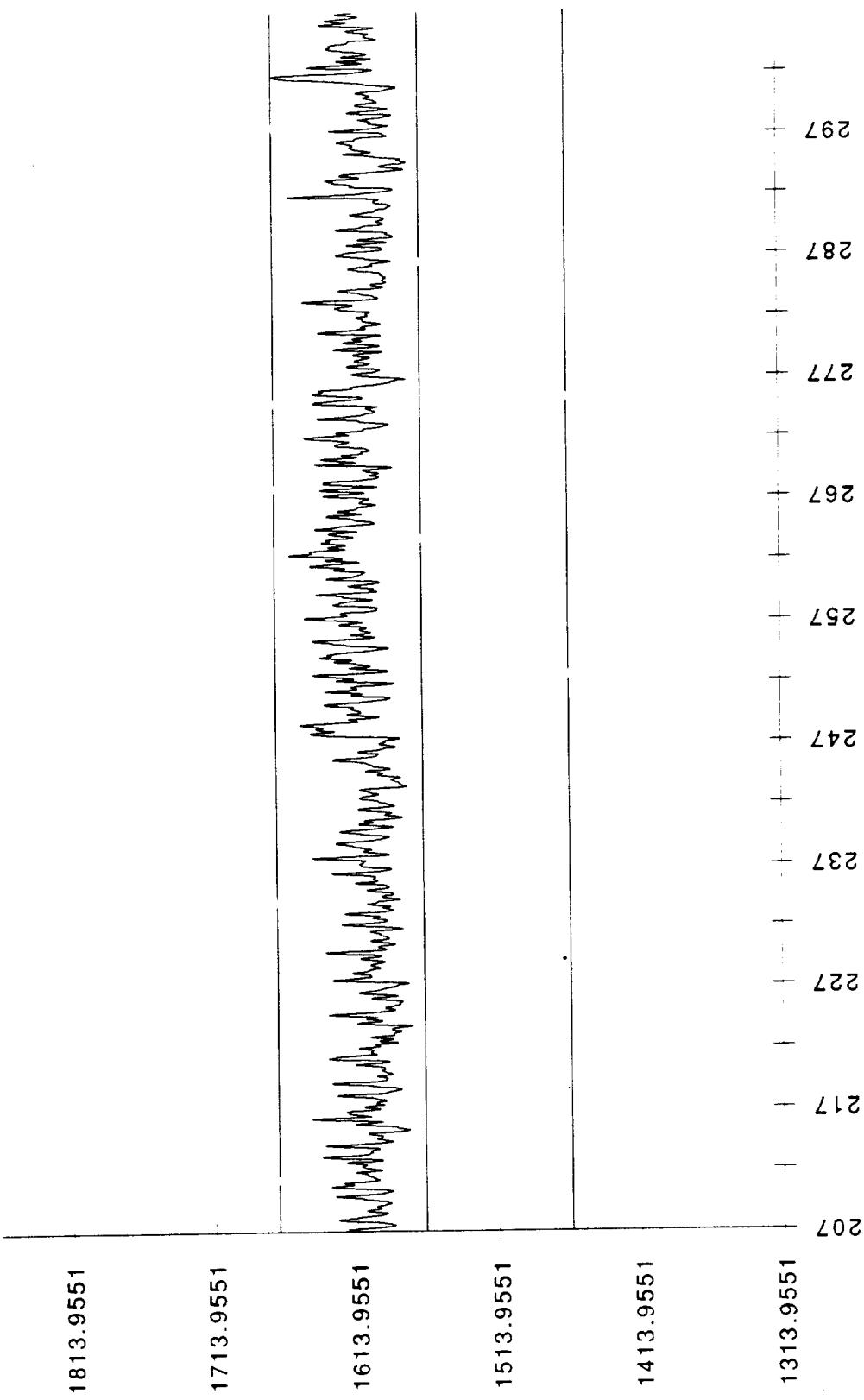
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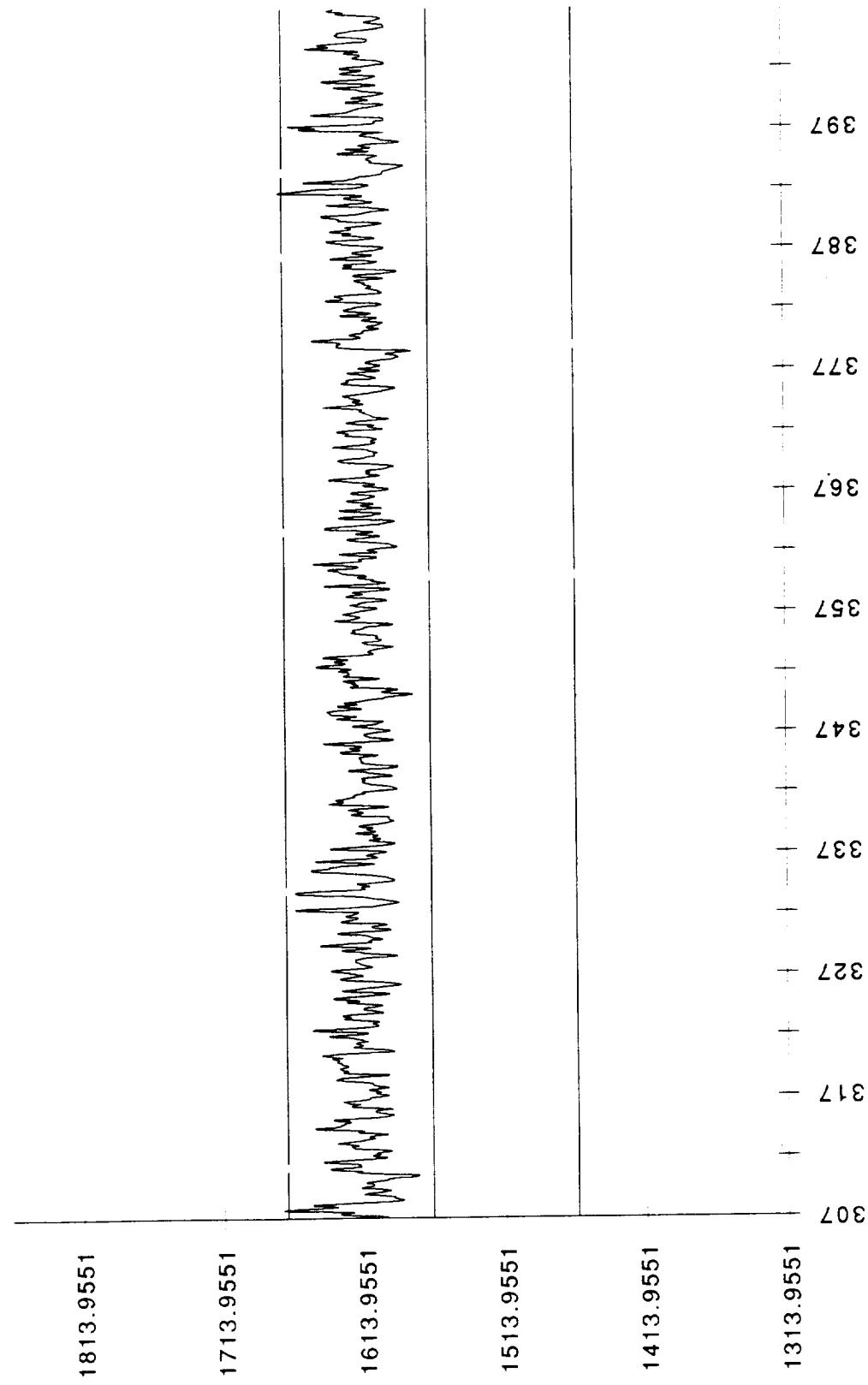


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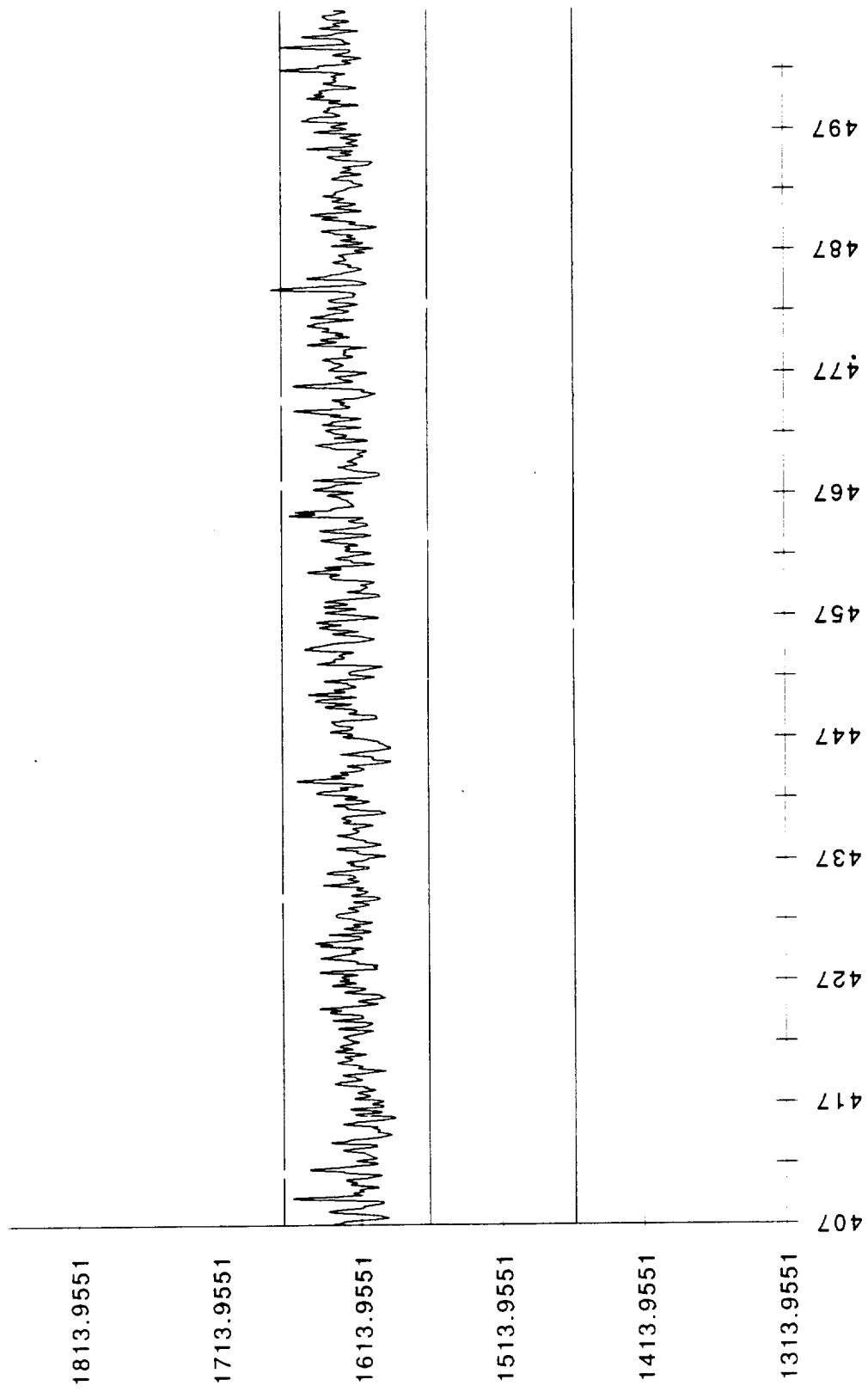


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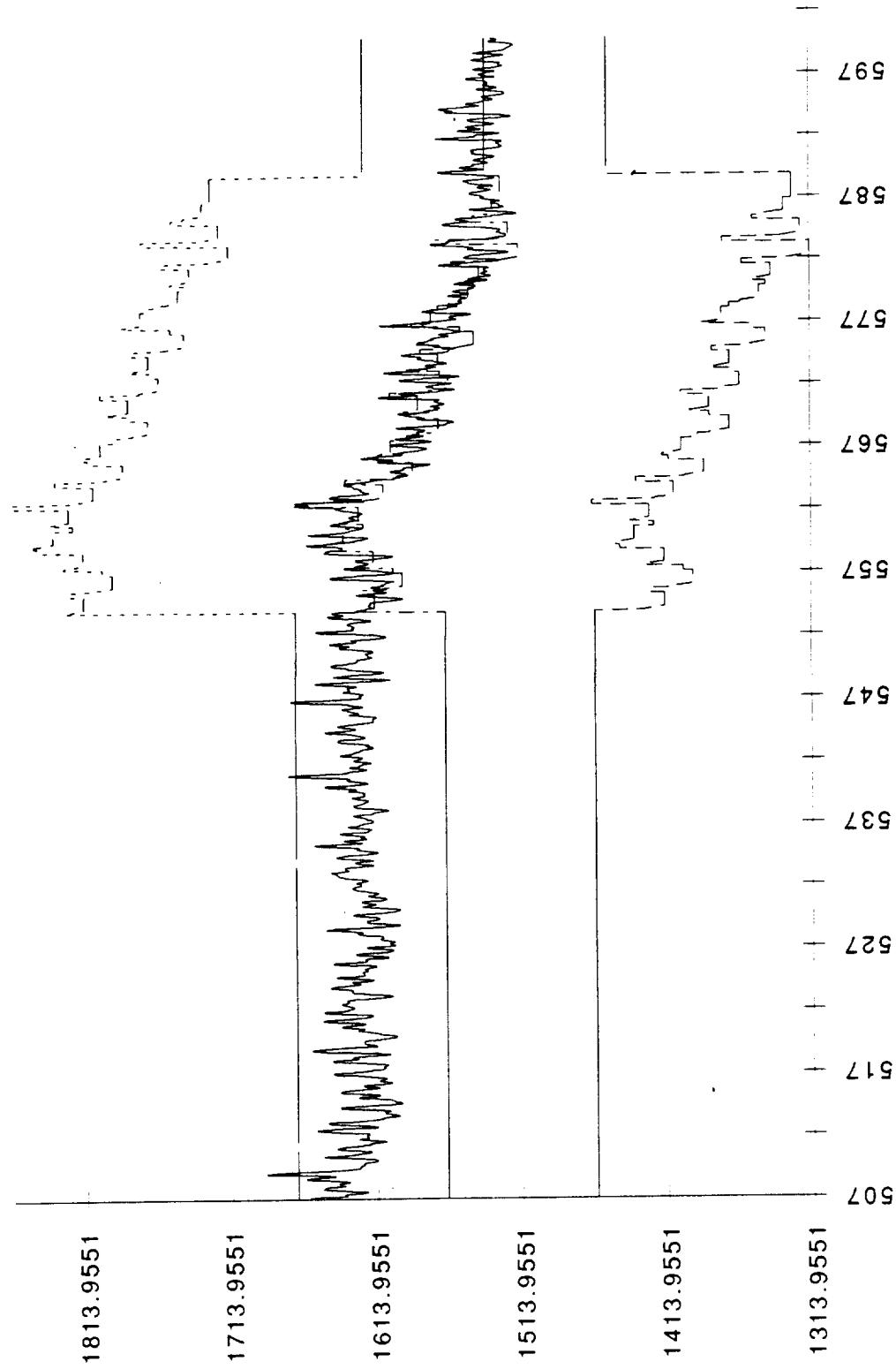
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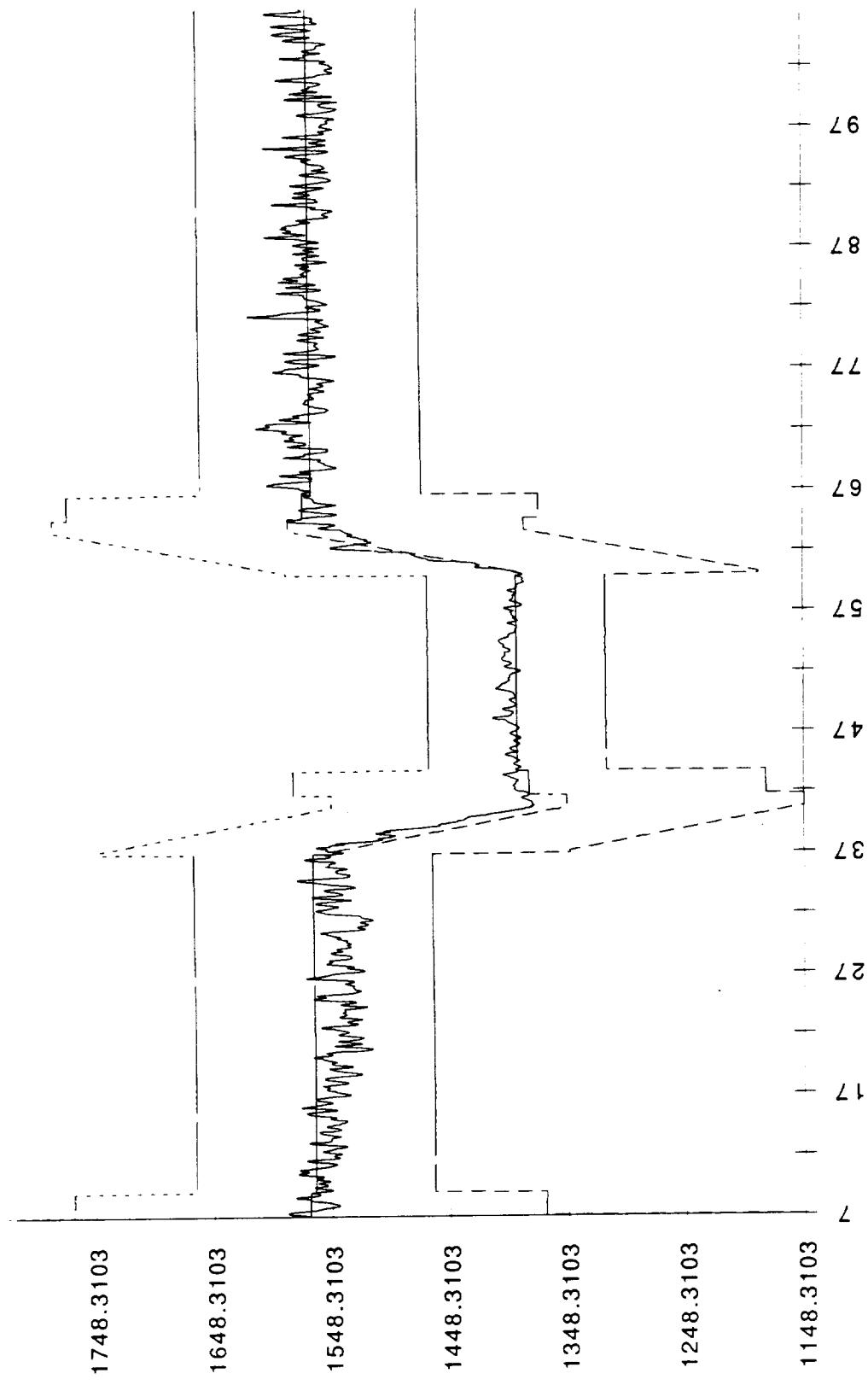
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904-201 HPFP TDT A.T

904-205 HPFP TDT A.T

904-205 HPFP TDT A.T



904-205 HPFP TDT A.T

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1348.3103

1248.3103

1148.3103

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127

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137

167

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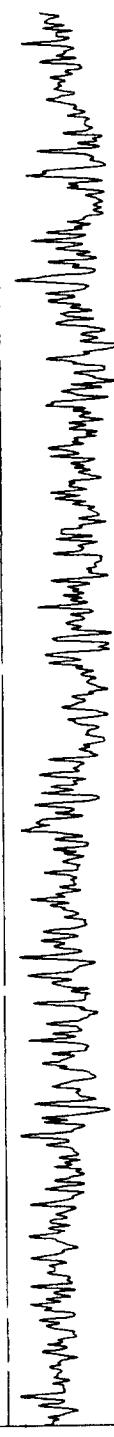
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1148.3103

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217
227
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287
297

904-205 HPFP TDT A.T

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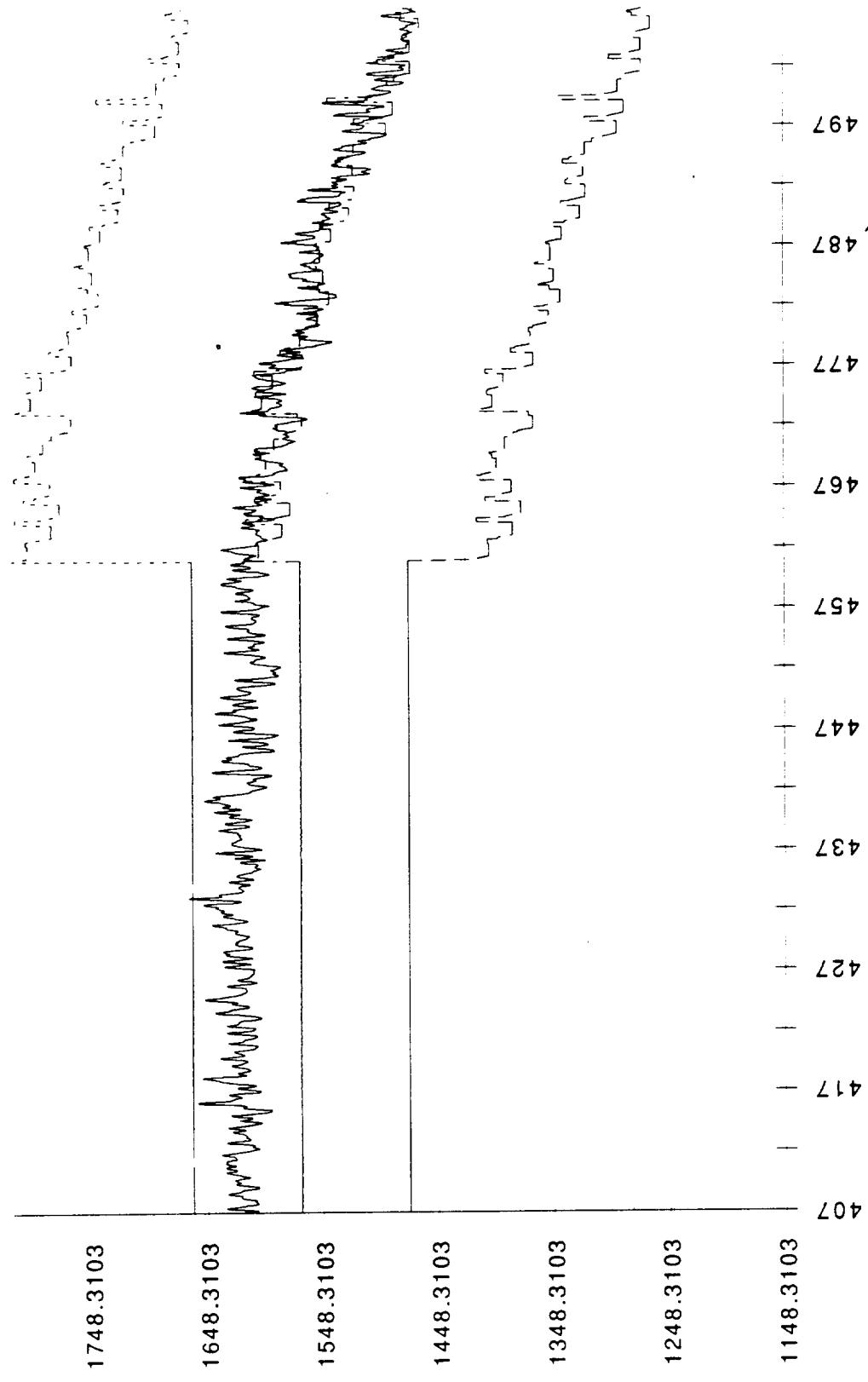
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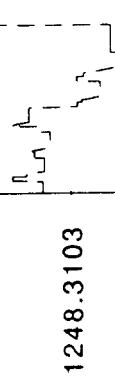
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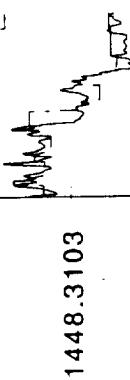
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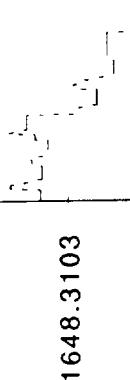
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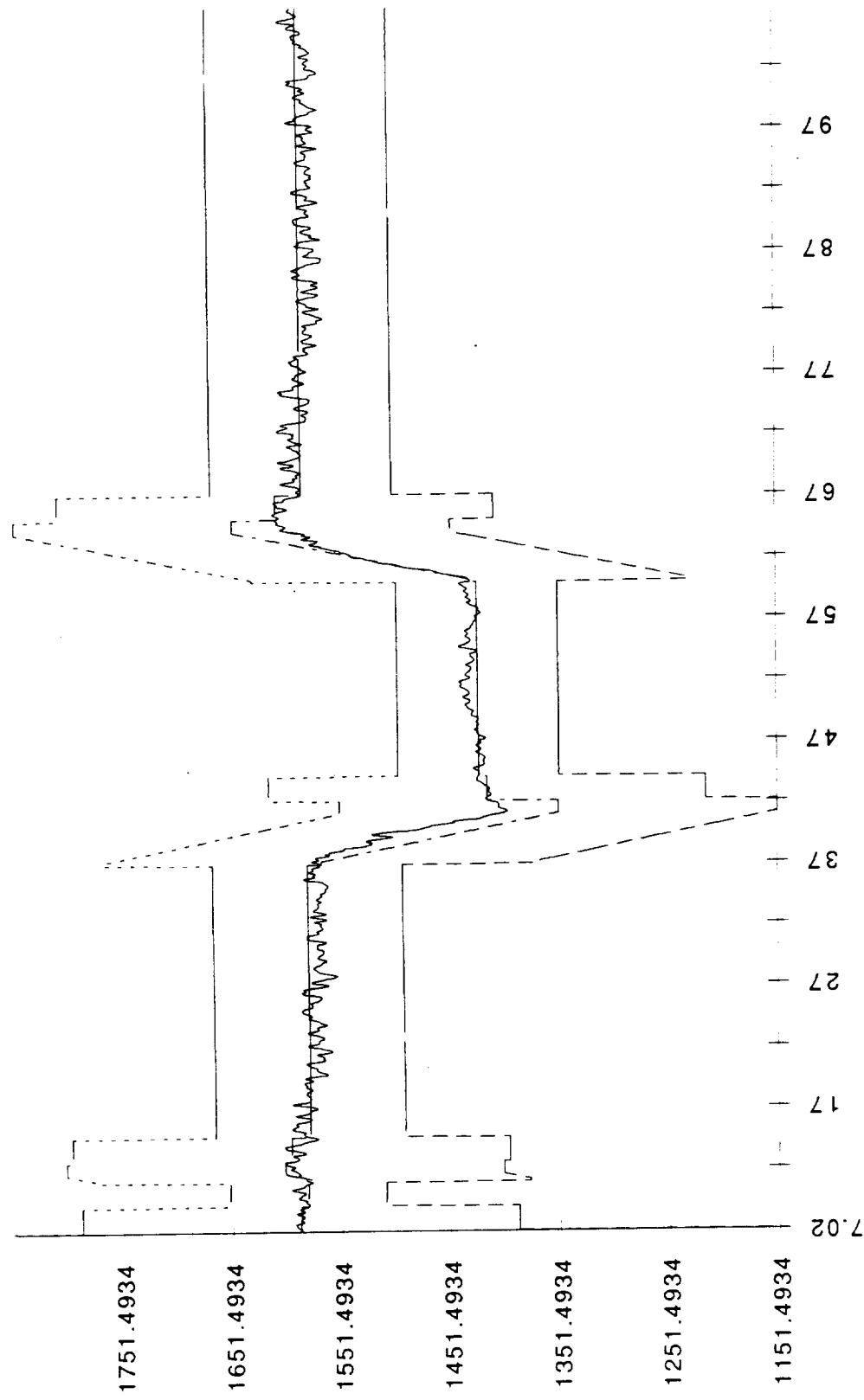
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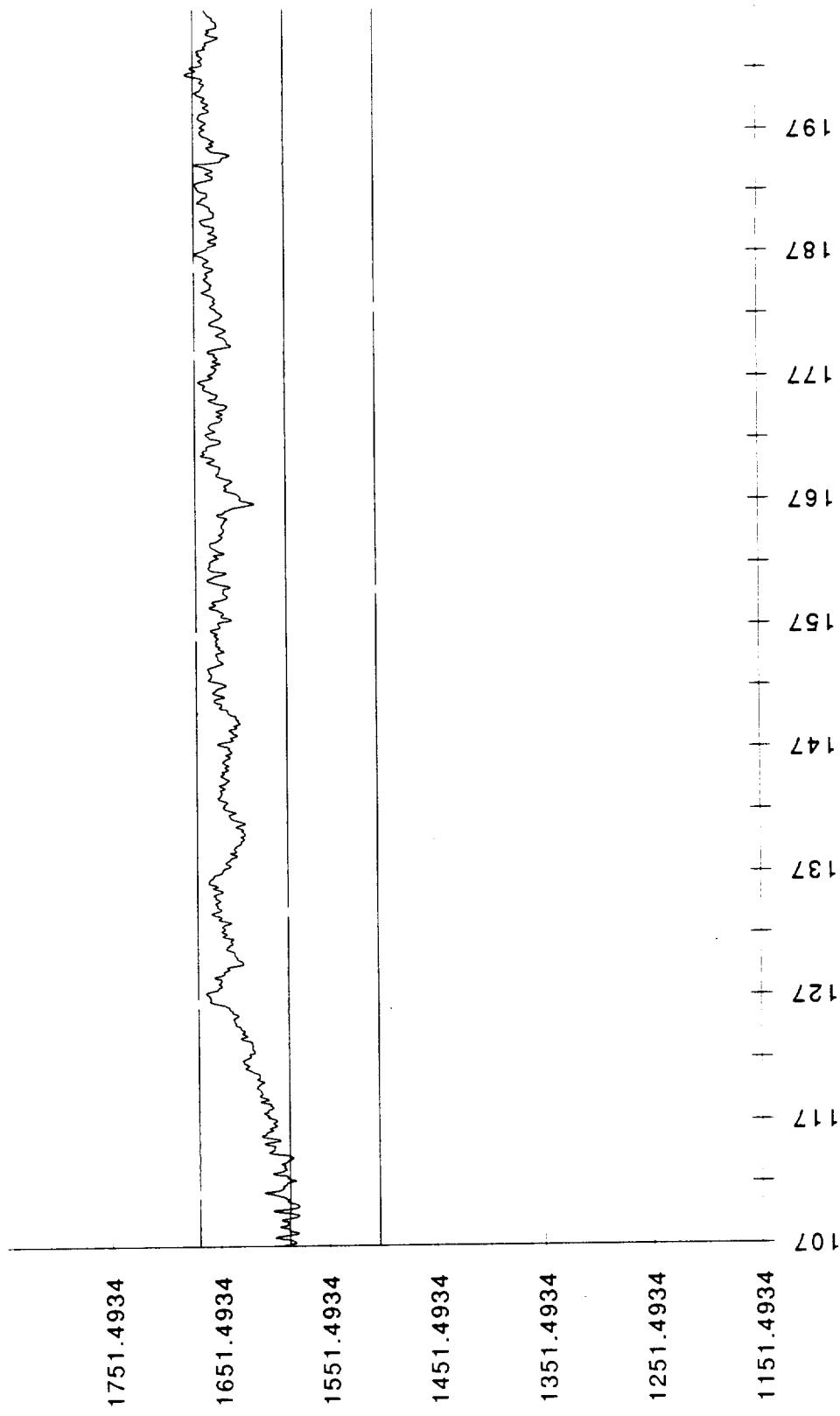
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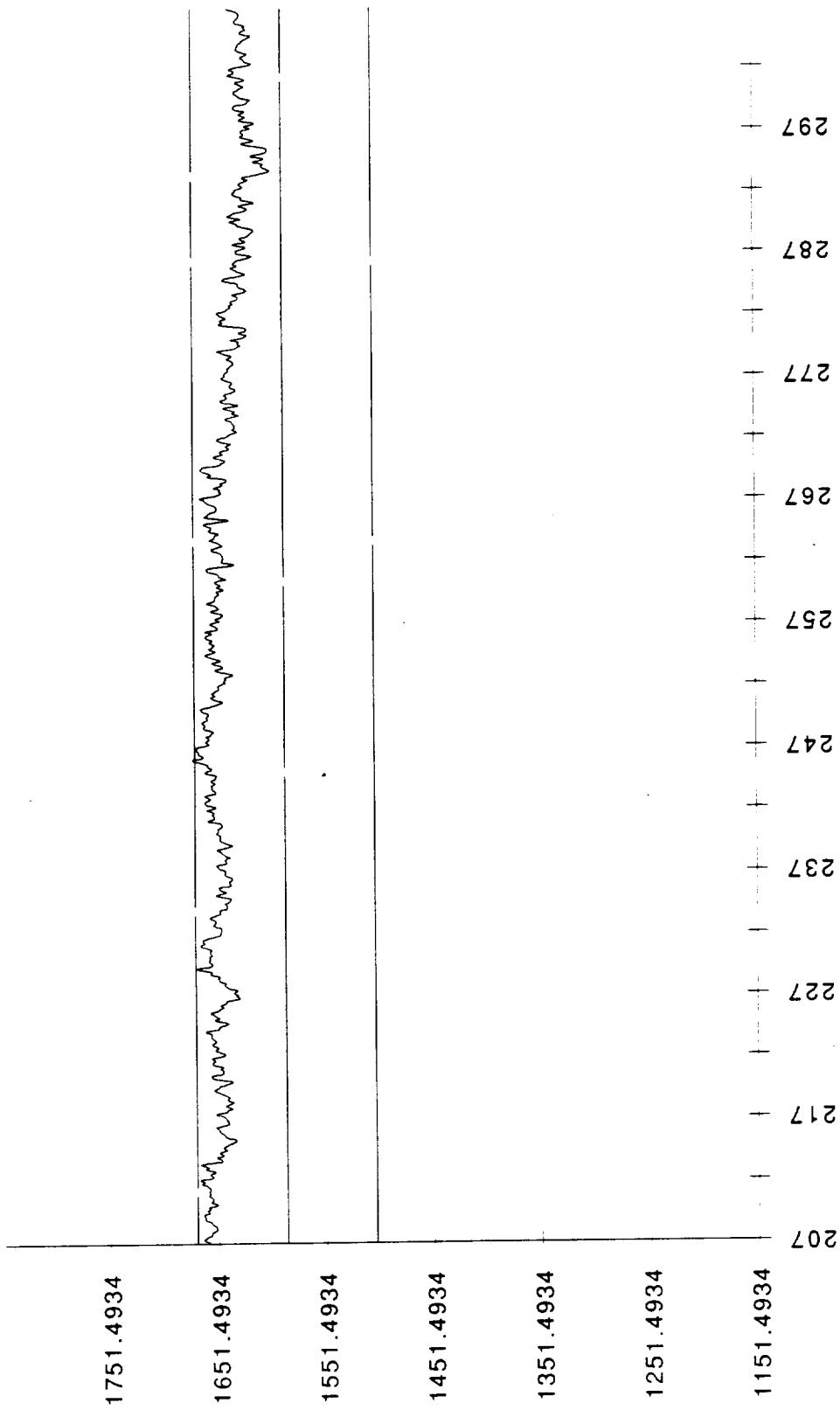
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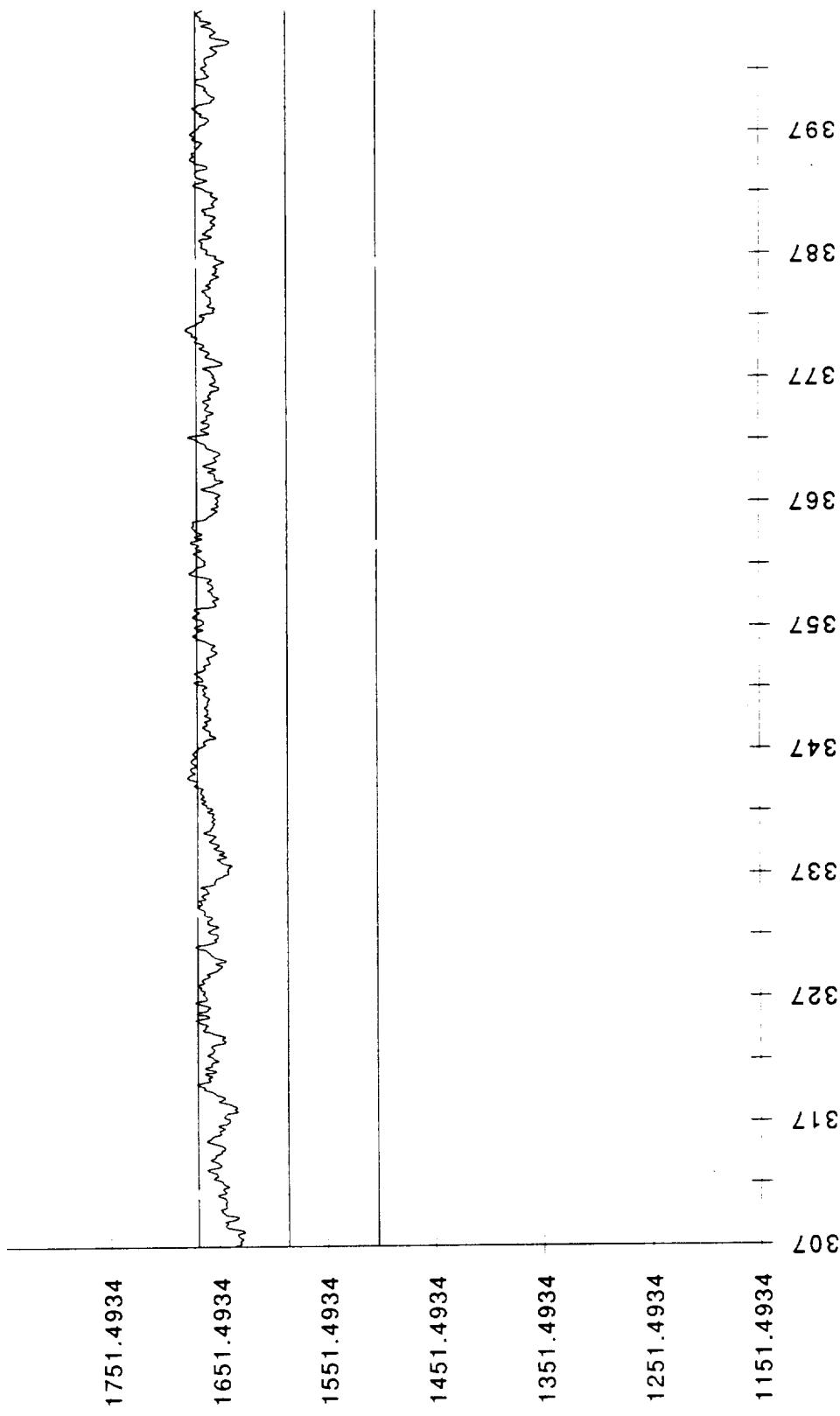
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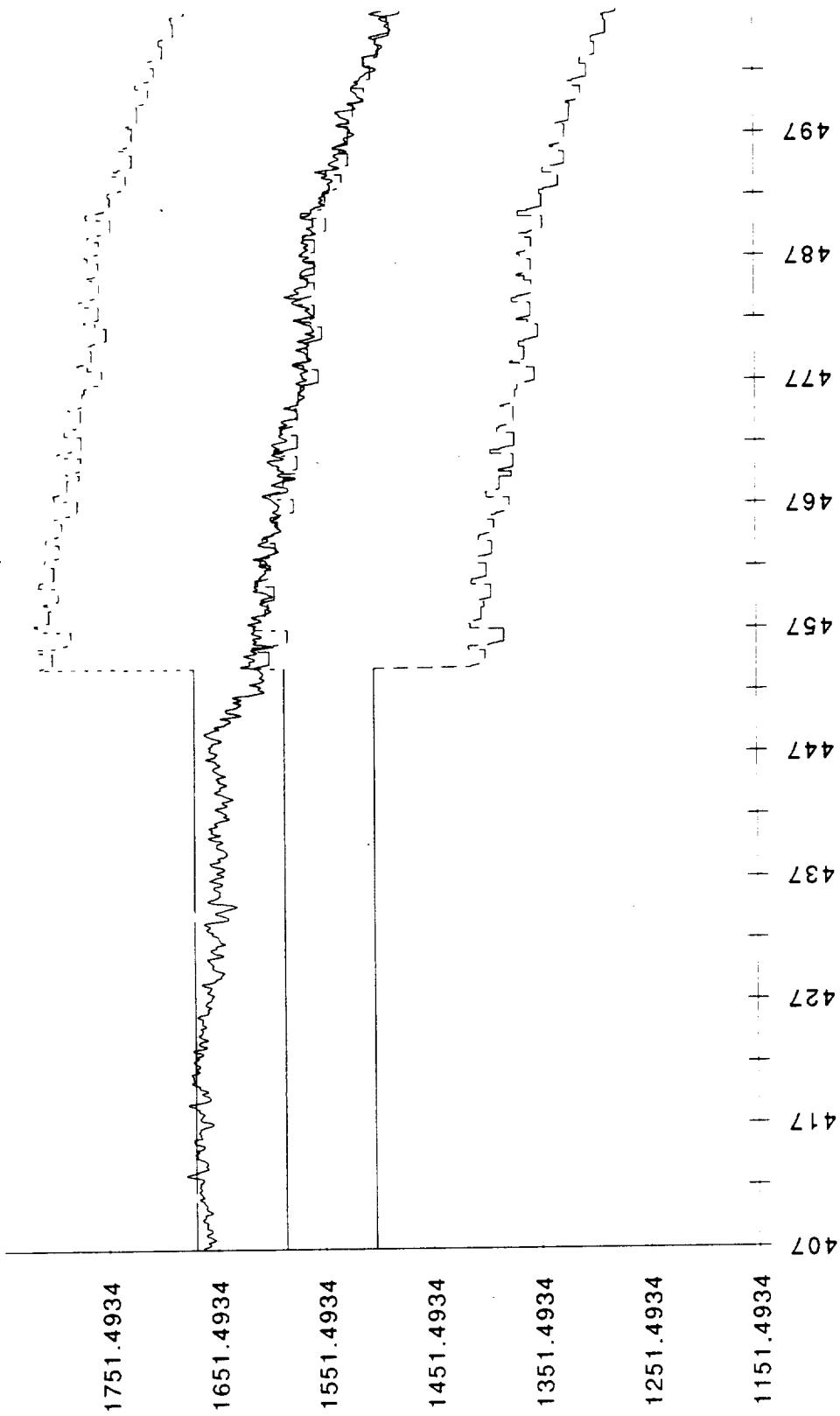
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904-207 HPFP TDT A.T

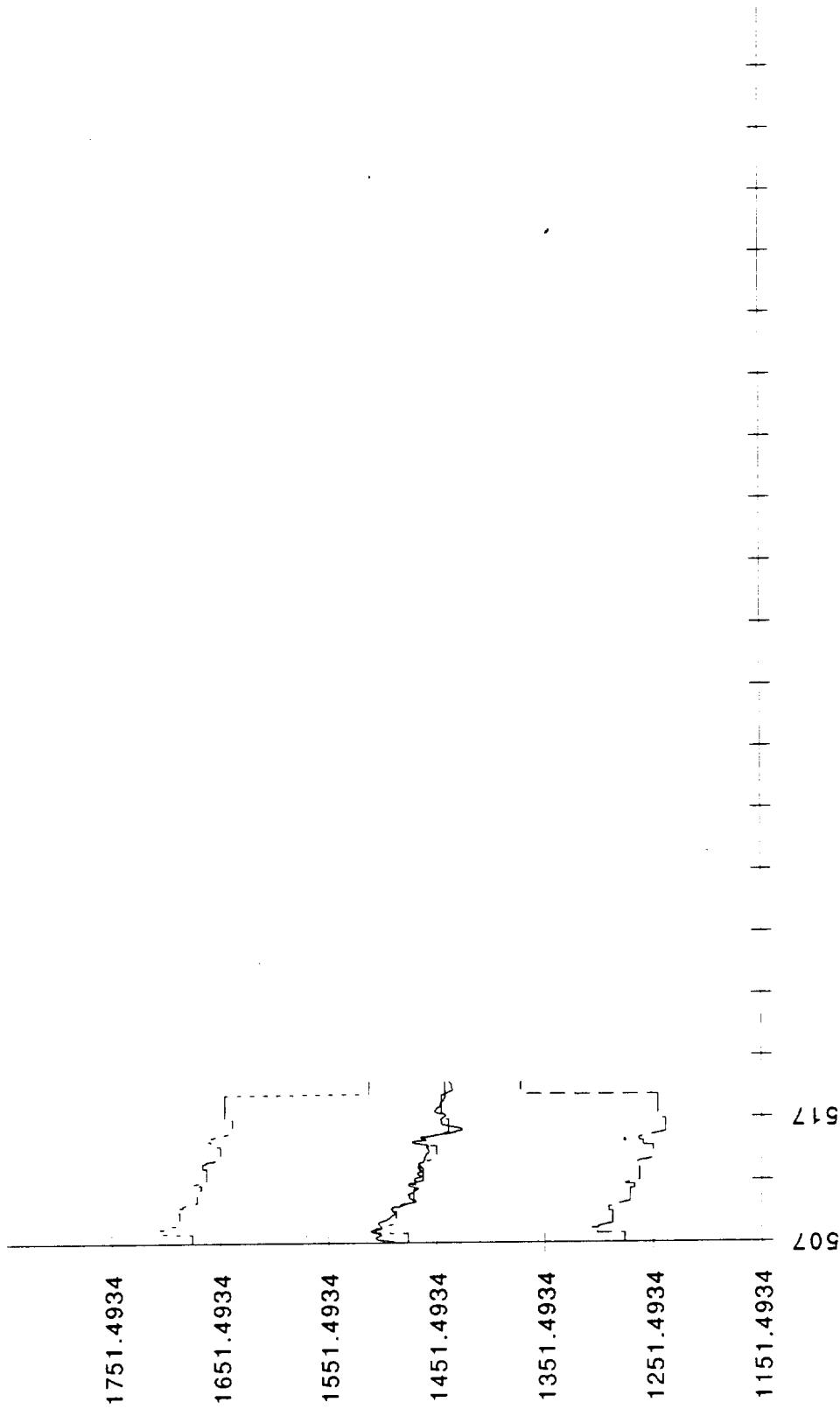


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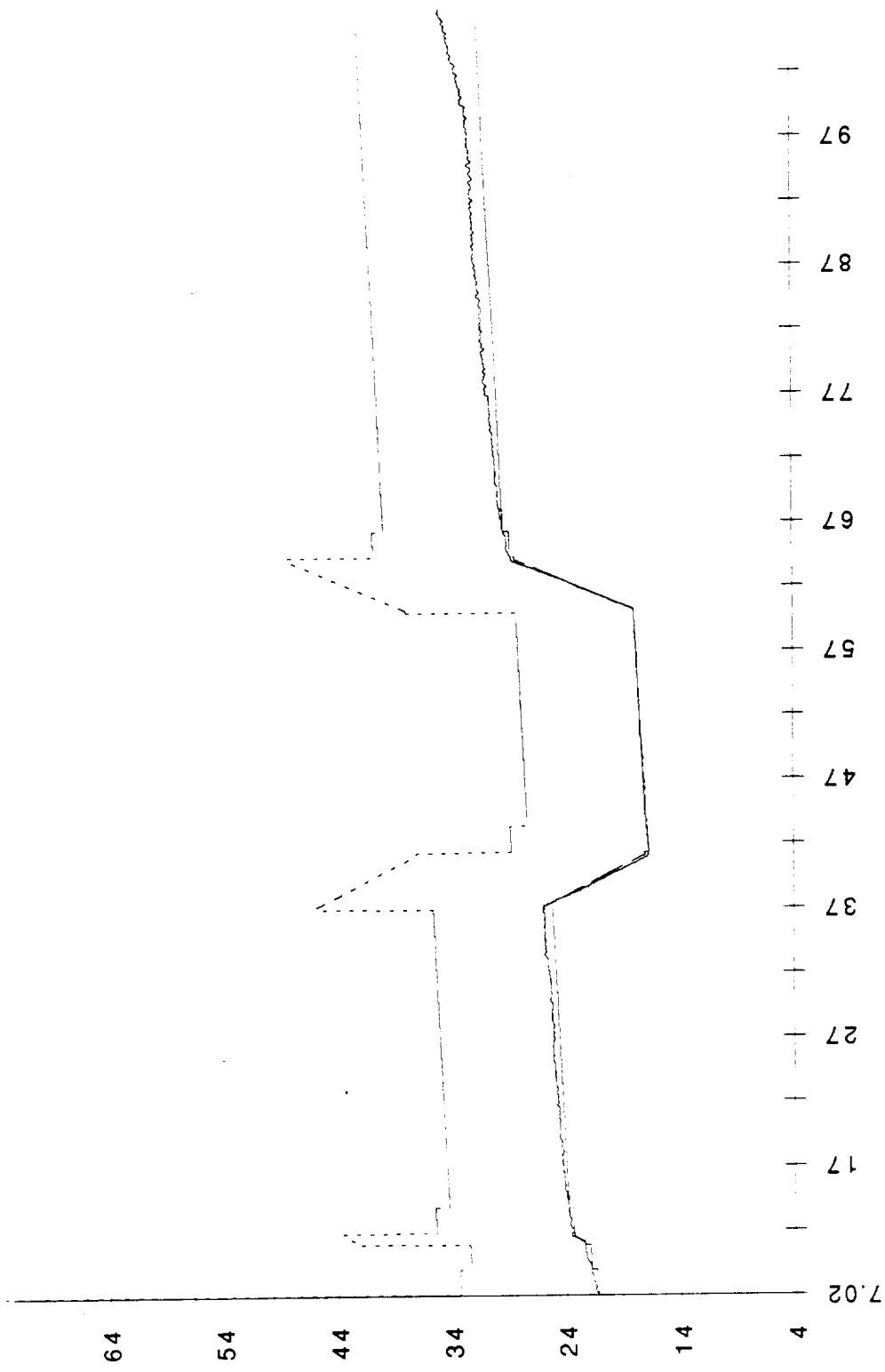
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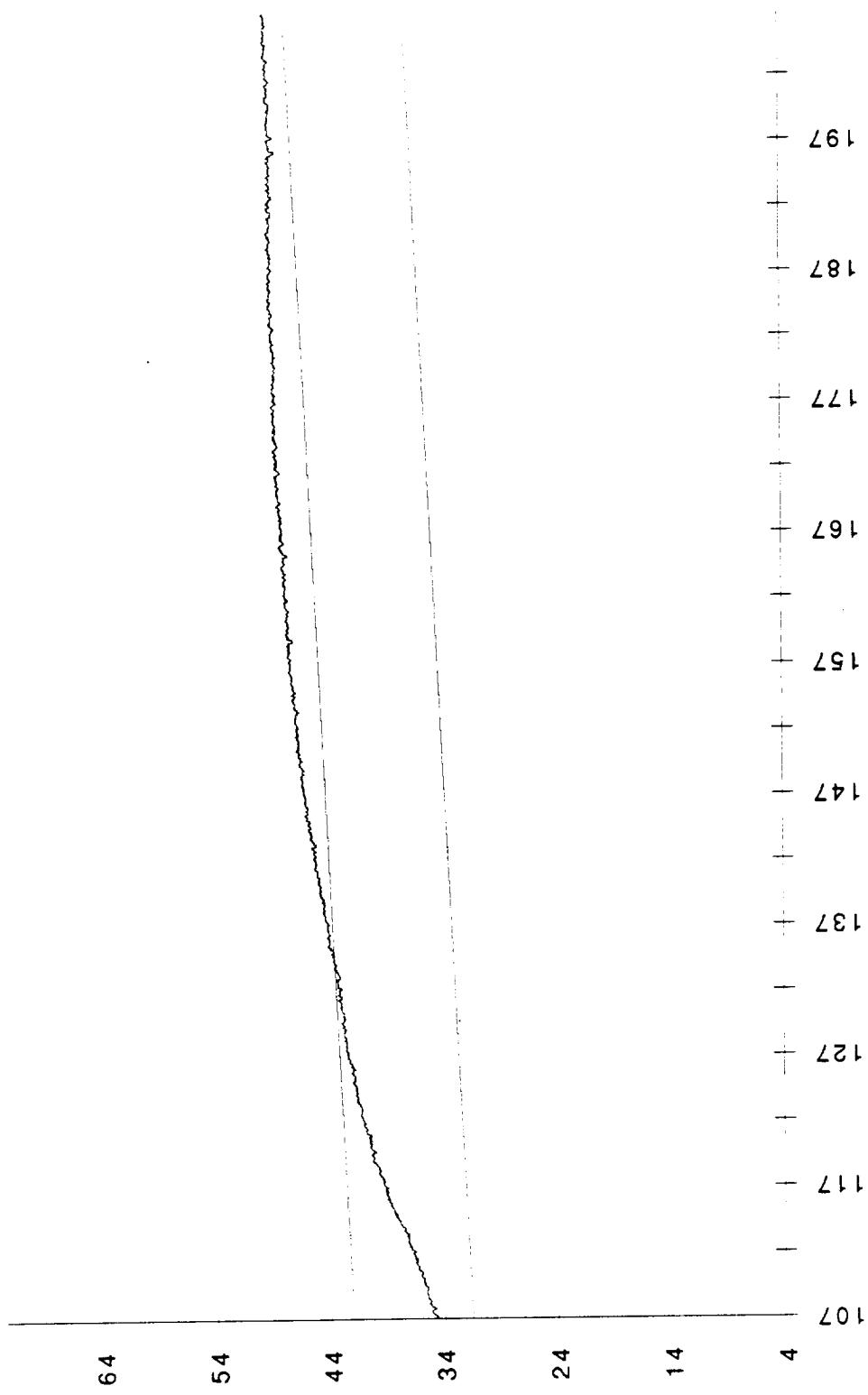
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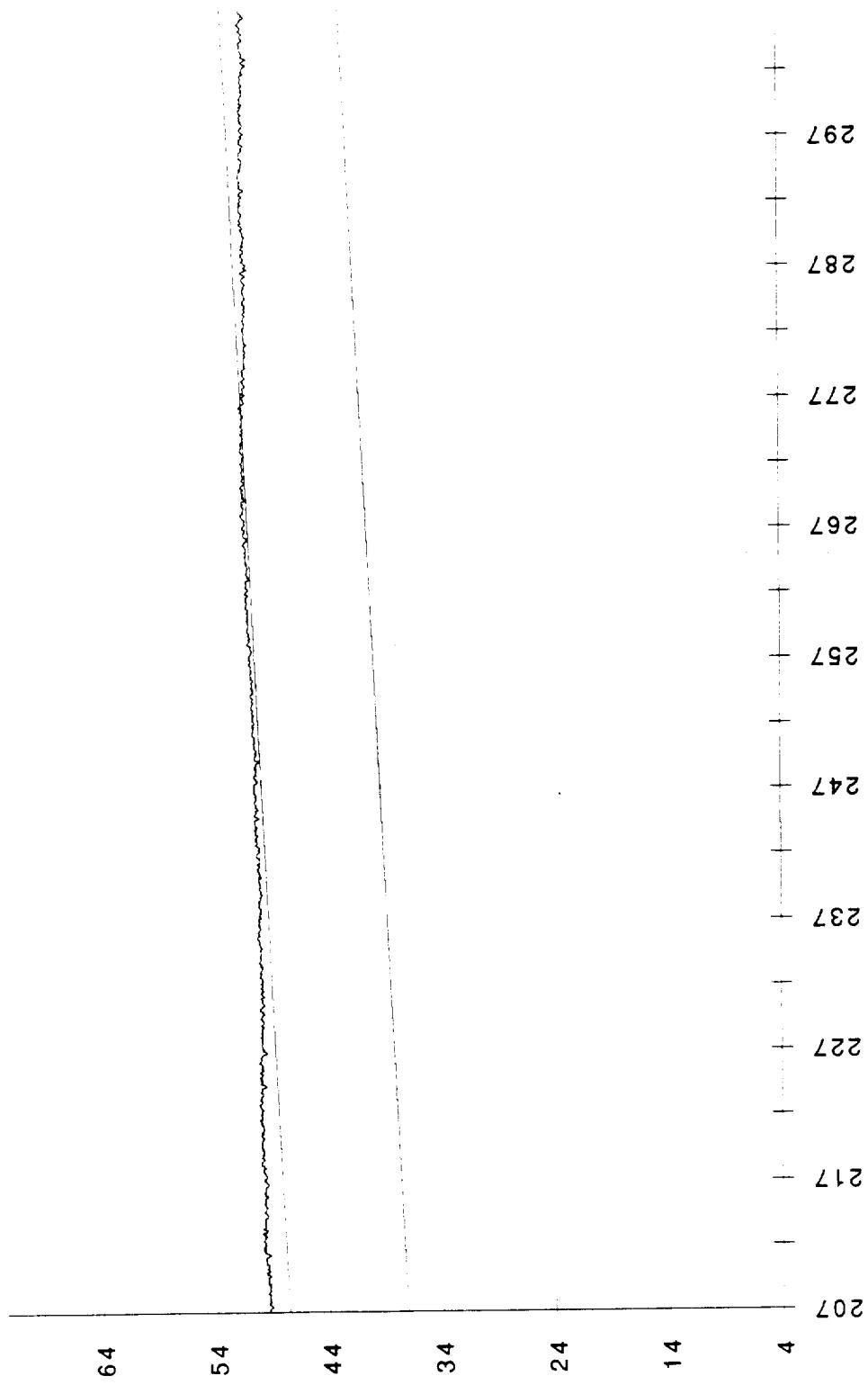
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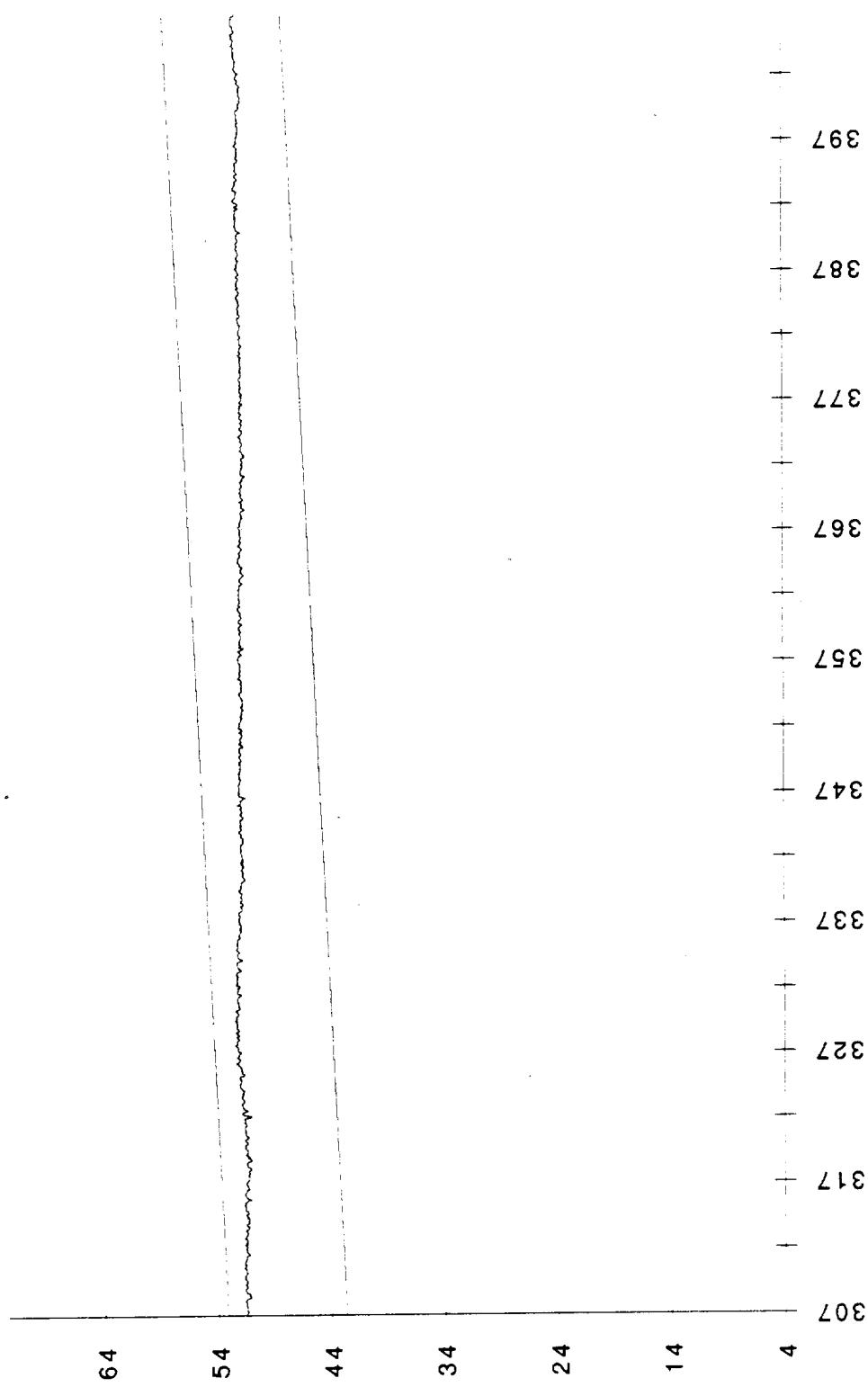
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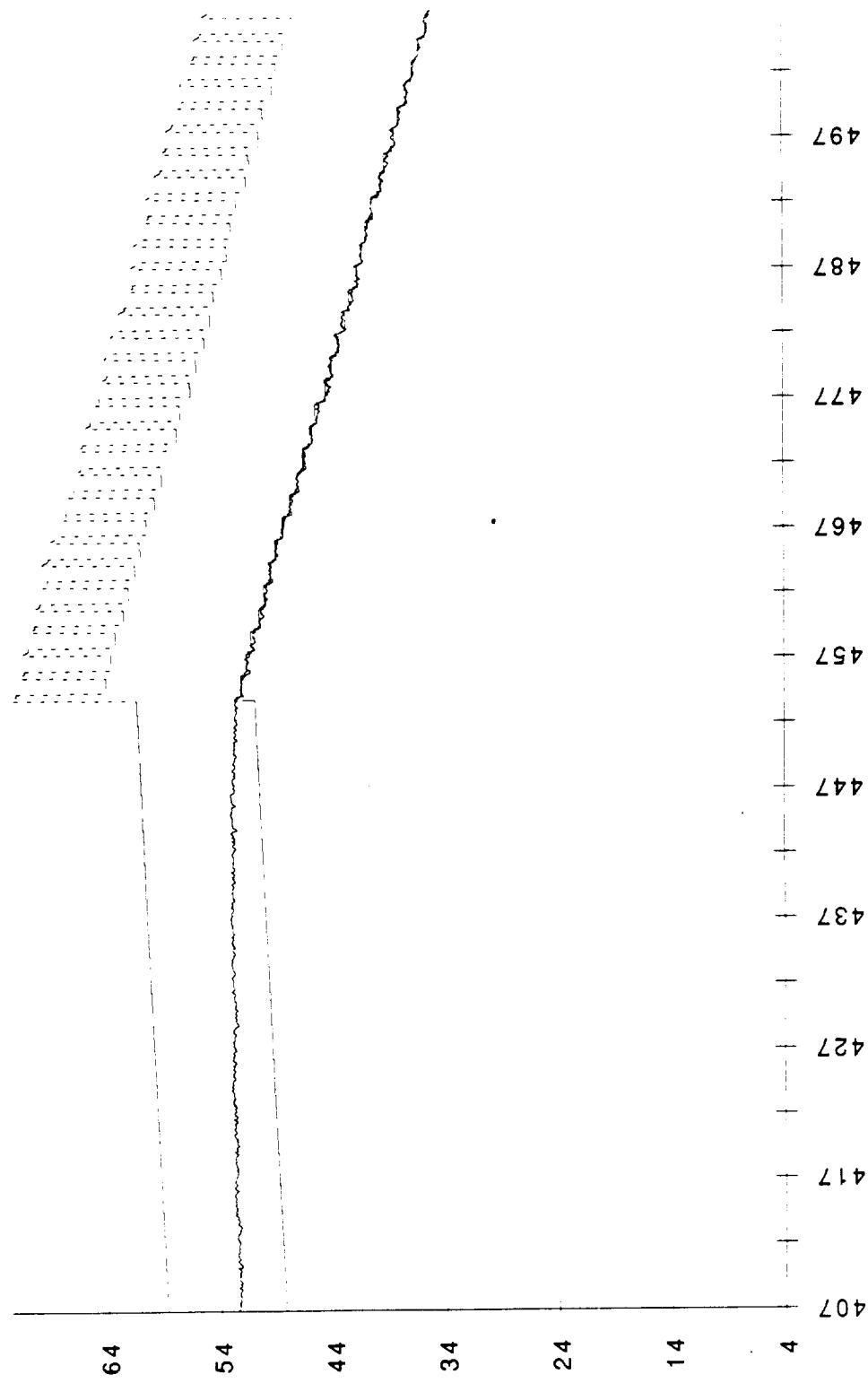
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904-207 HPOP SSC pr.T

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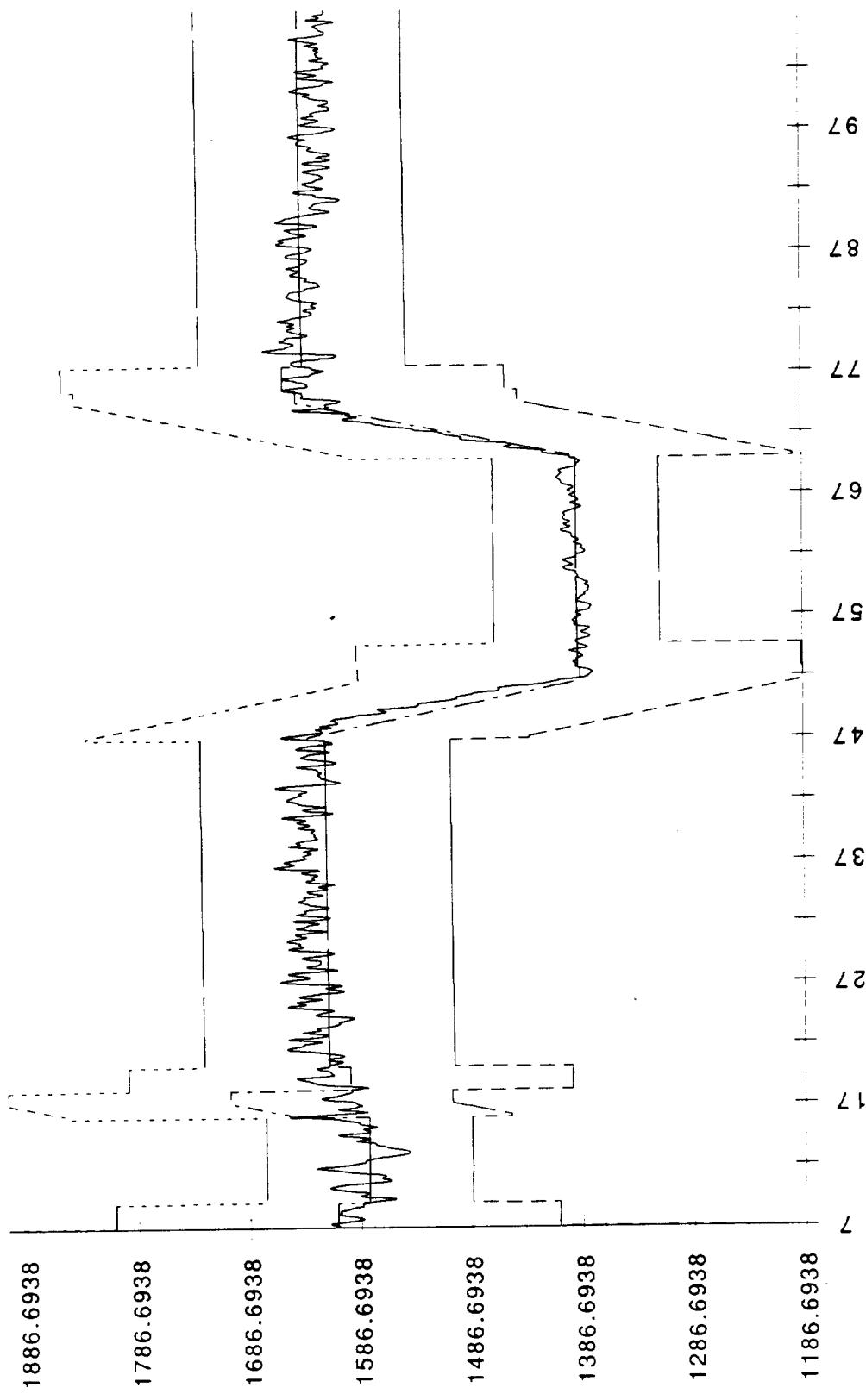


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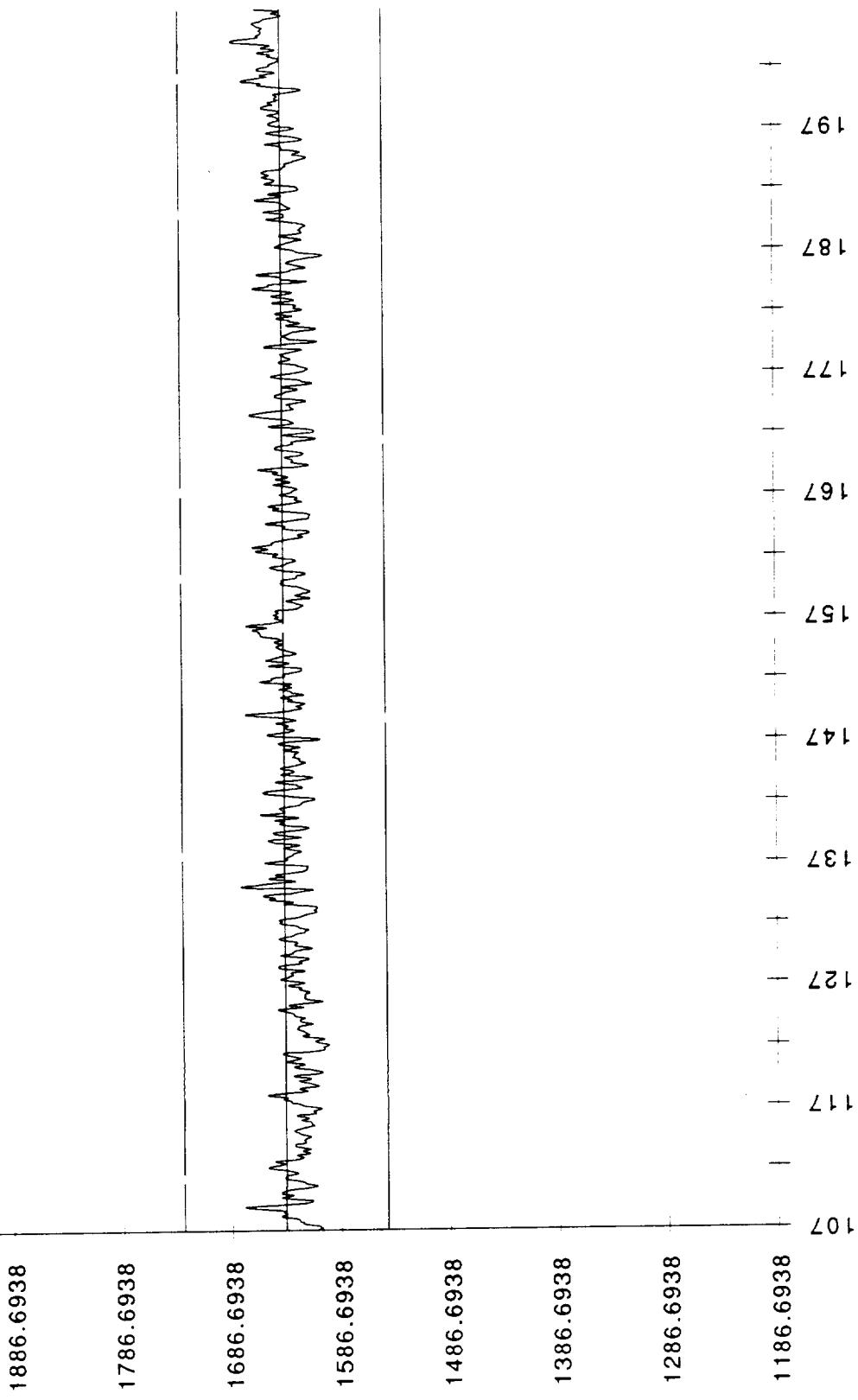


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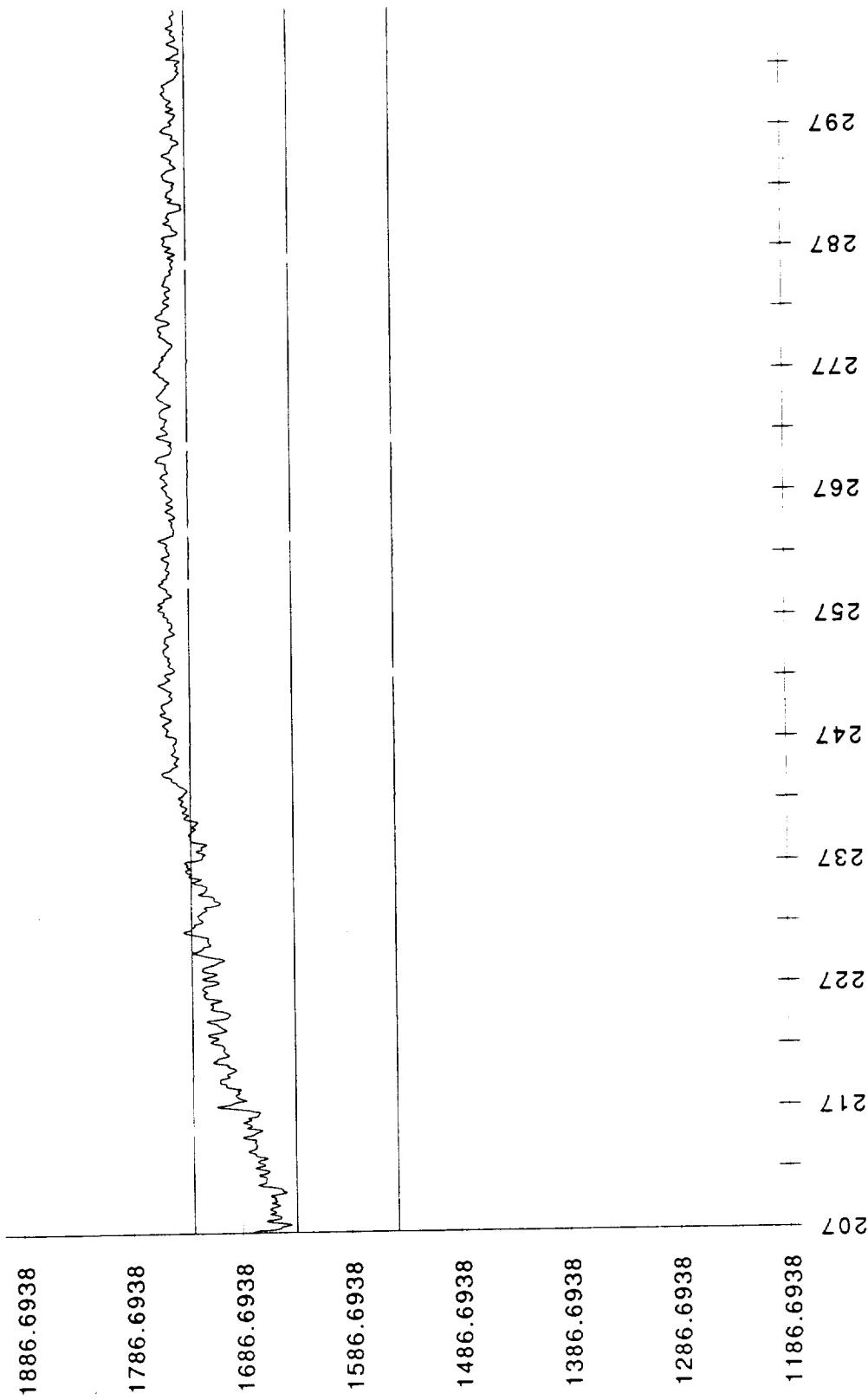


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904-219 HPFP TDT A.T



904-219 HPFP TDT A.T



904-219 HPFP TDT A.T

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1586.6938

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1186.6938

307

317

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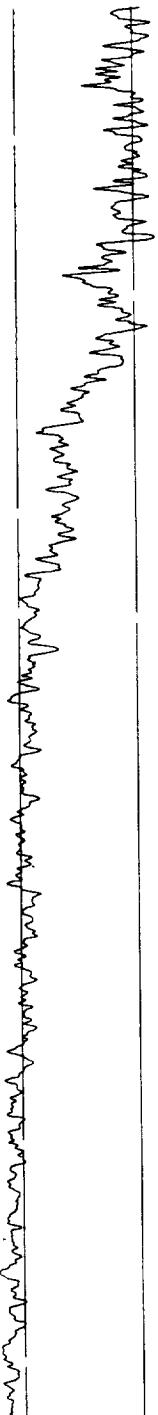
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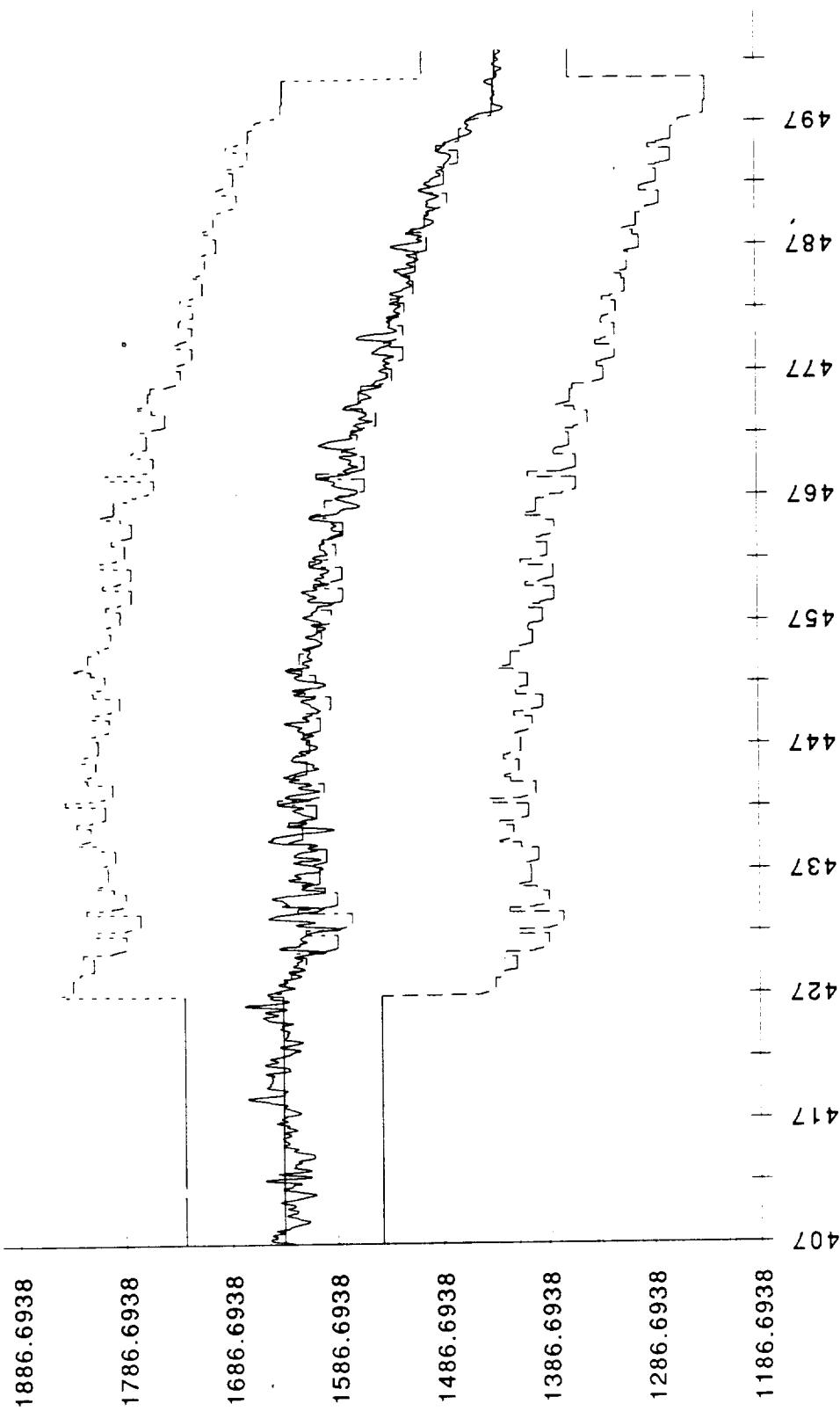
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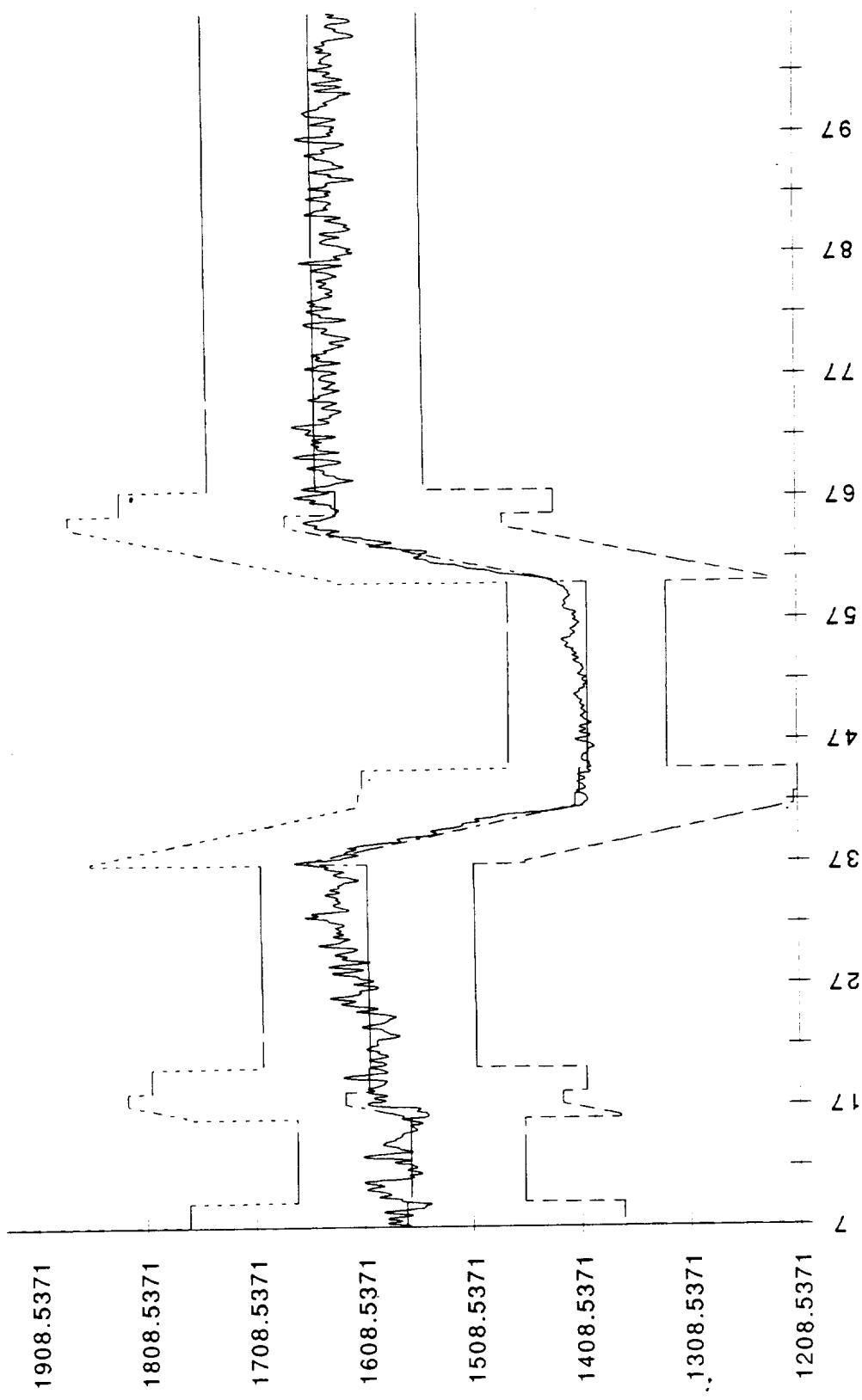
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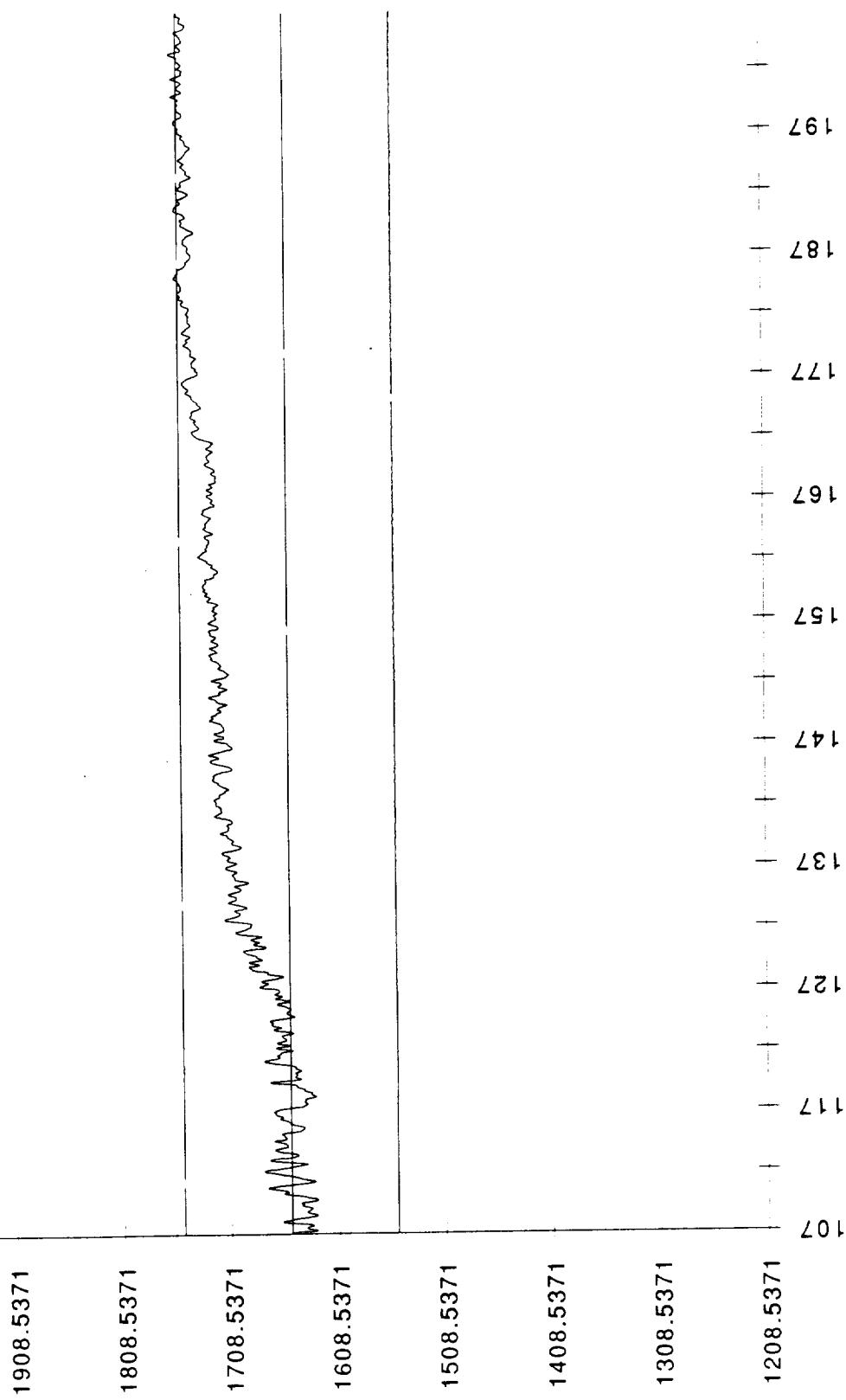
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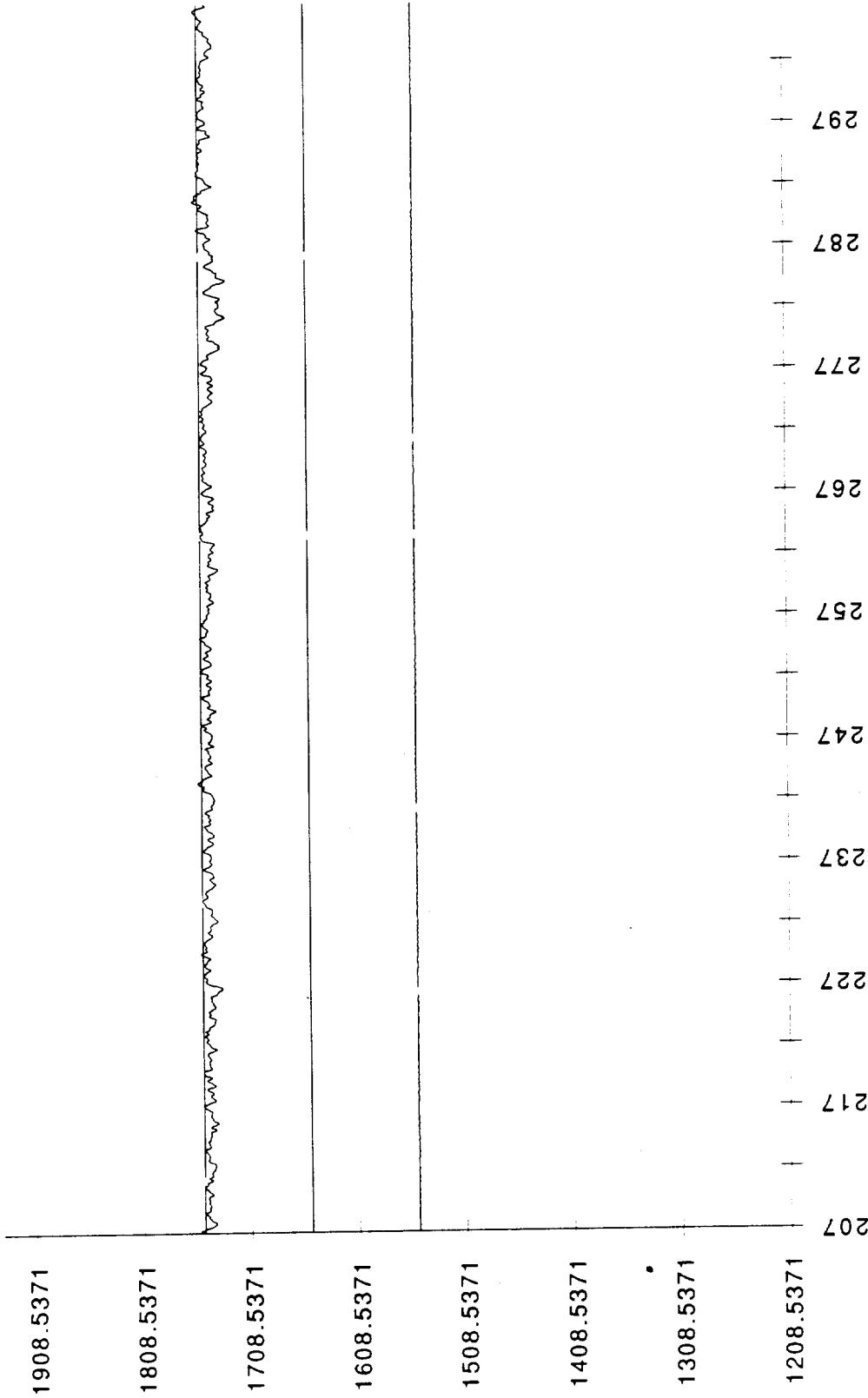


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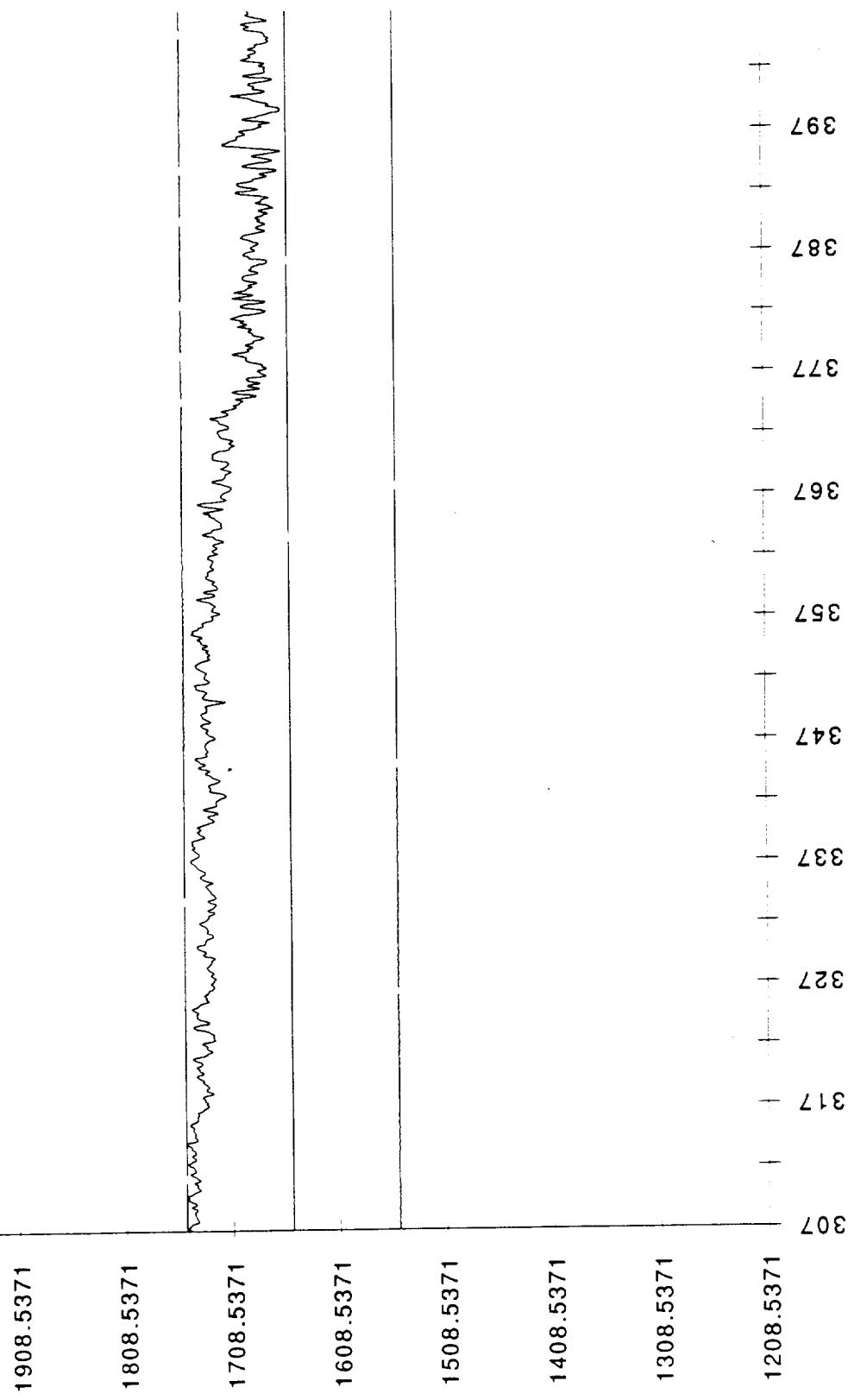
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904-220 HPFP TDT A.T



904-220 HPFP TDT A.T

904-220 HPFP TDT A.T



904-220 HPFP TDT A.T

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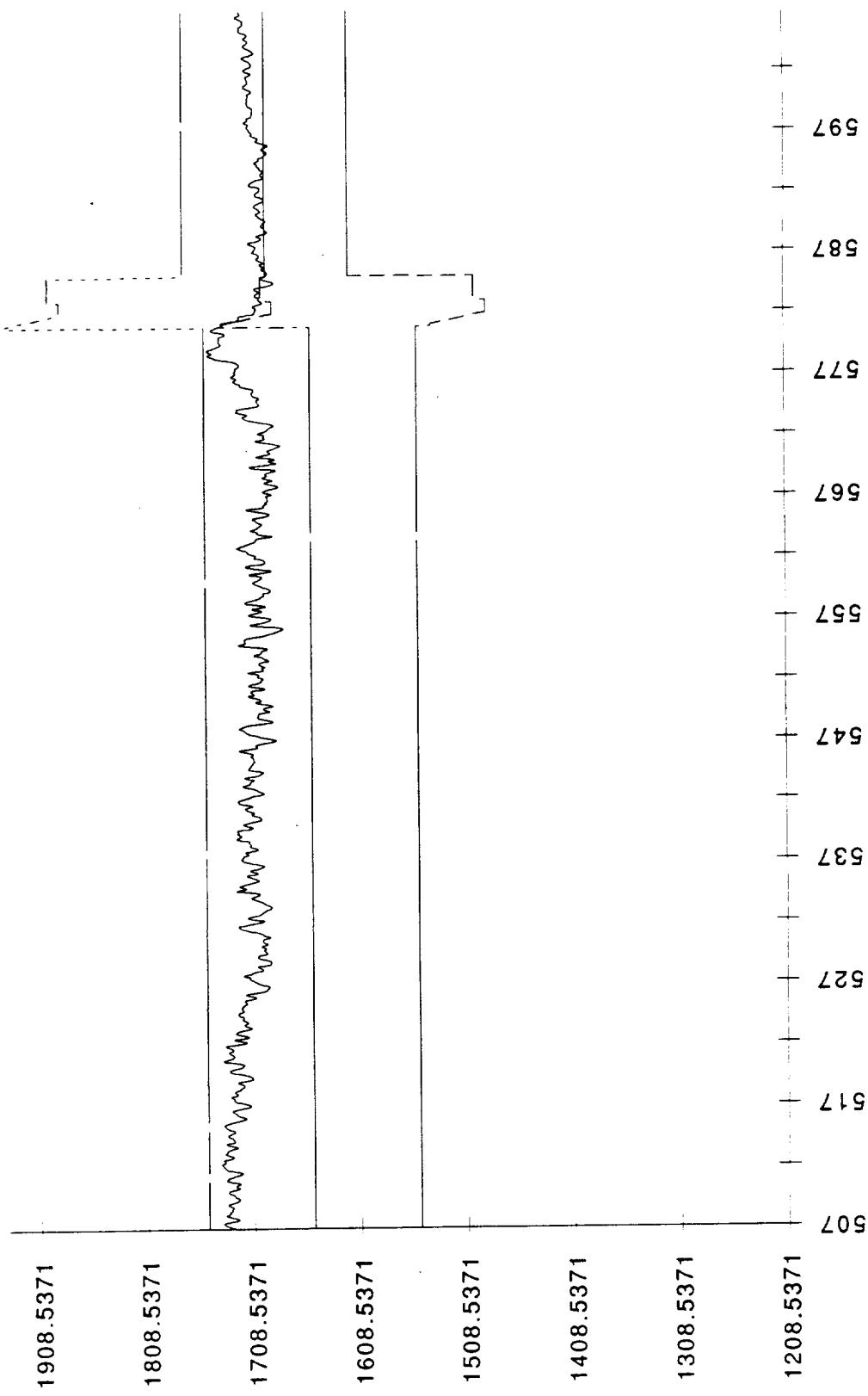
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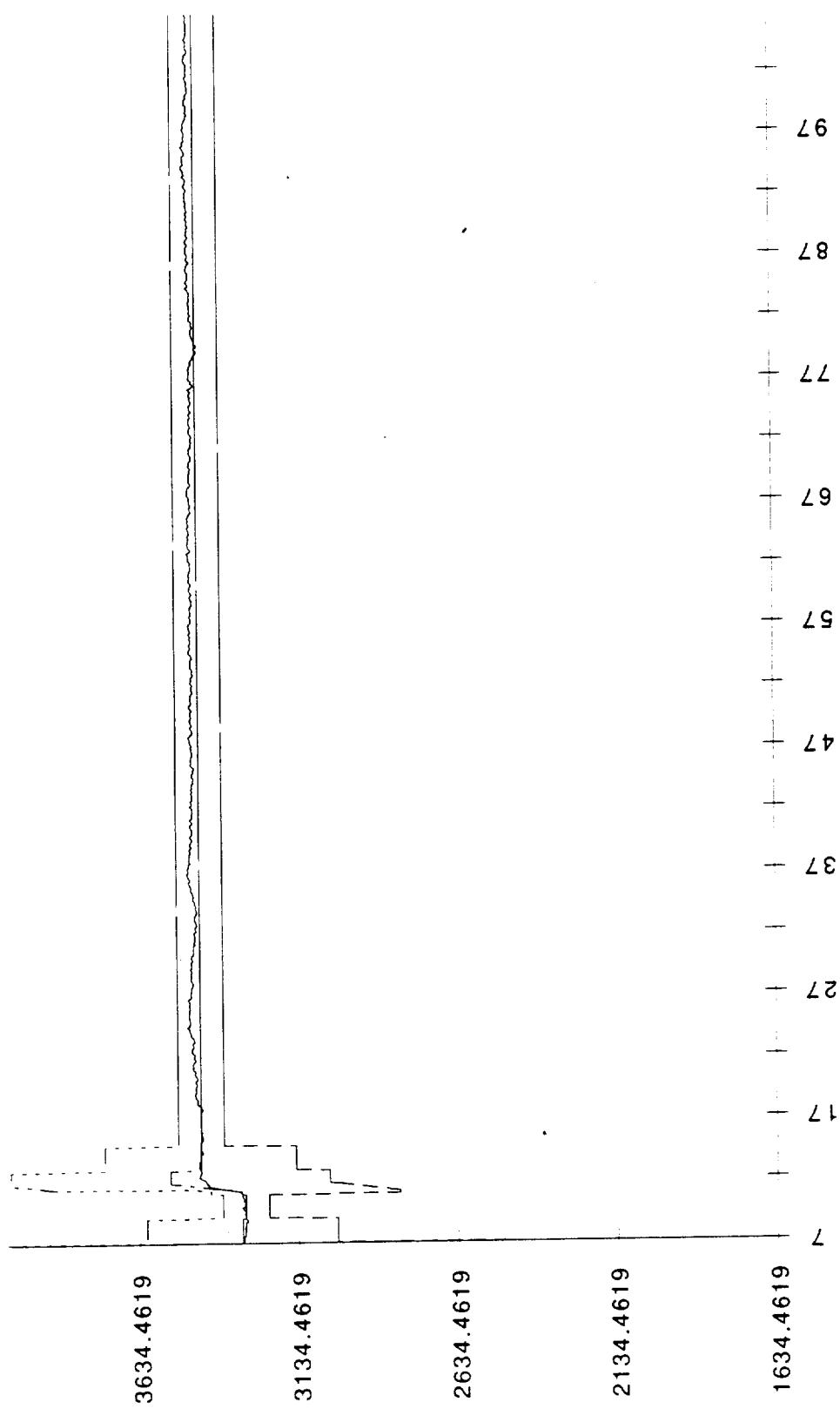
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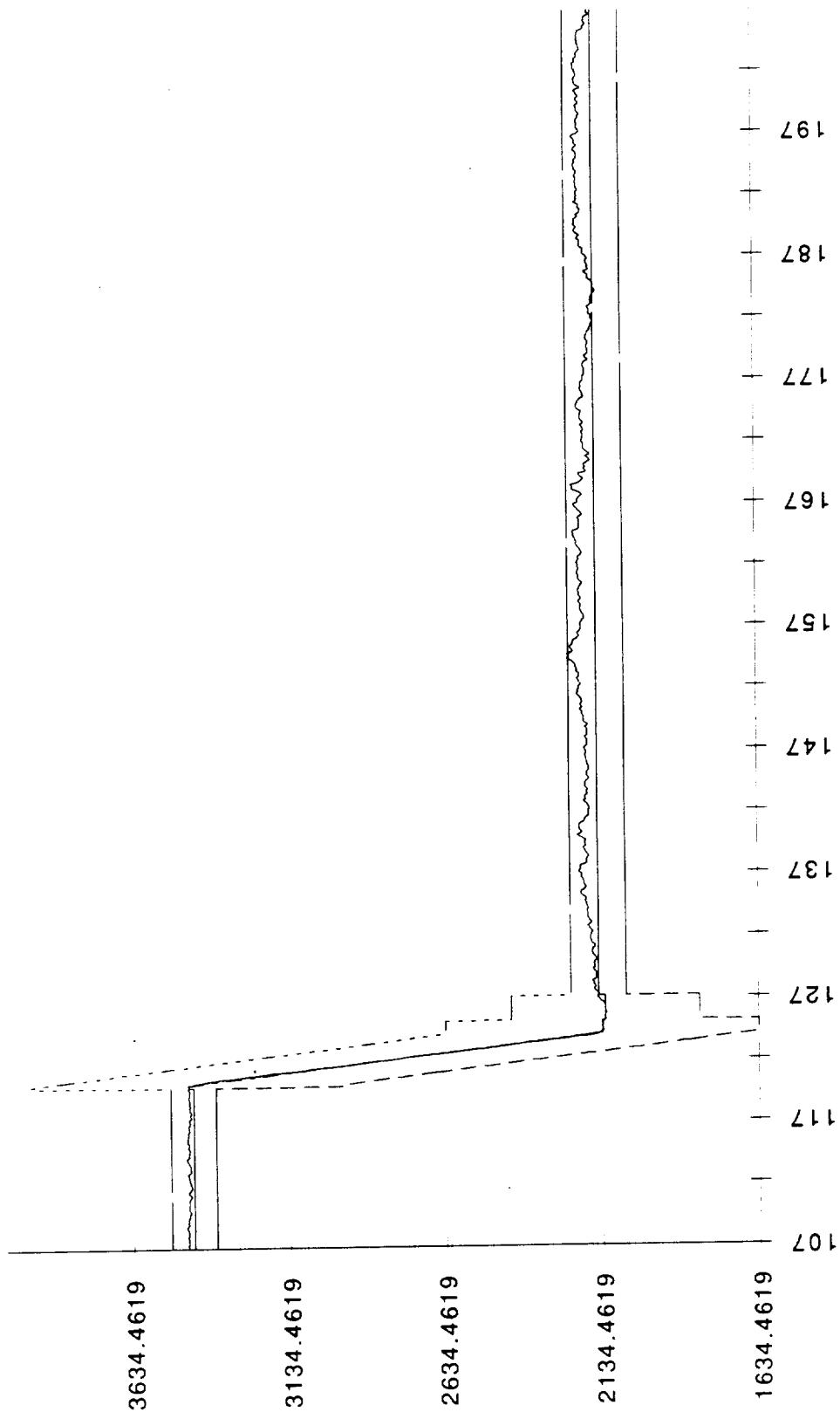


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904-227 HPFP CL pr.T





904-227 HPFP CL pr.T

217

207

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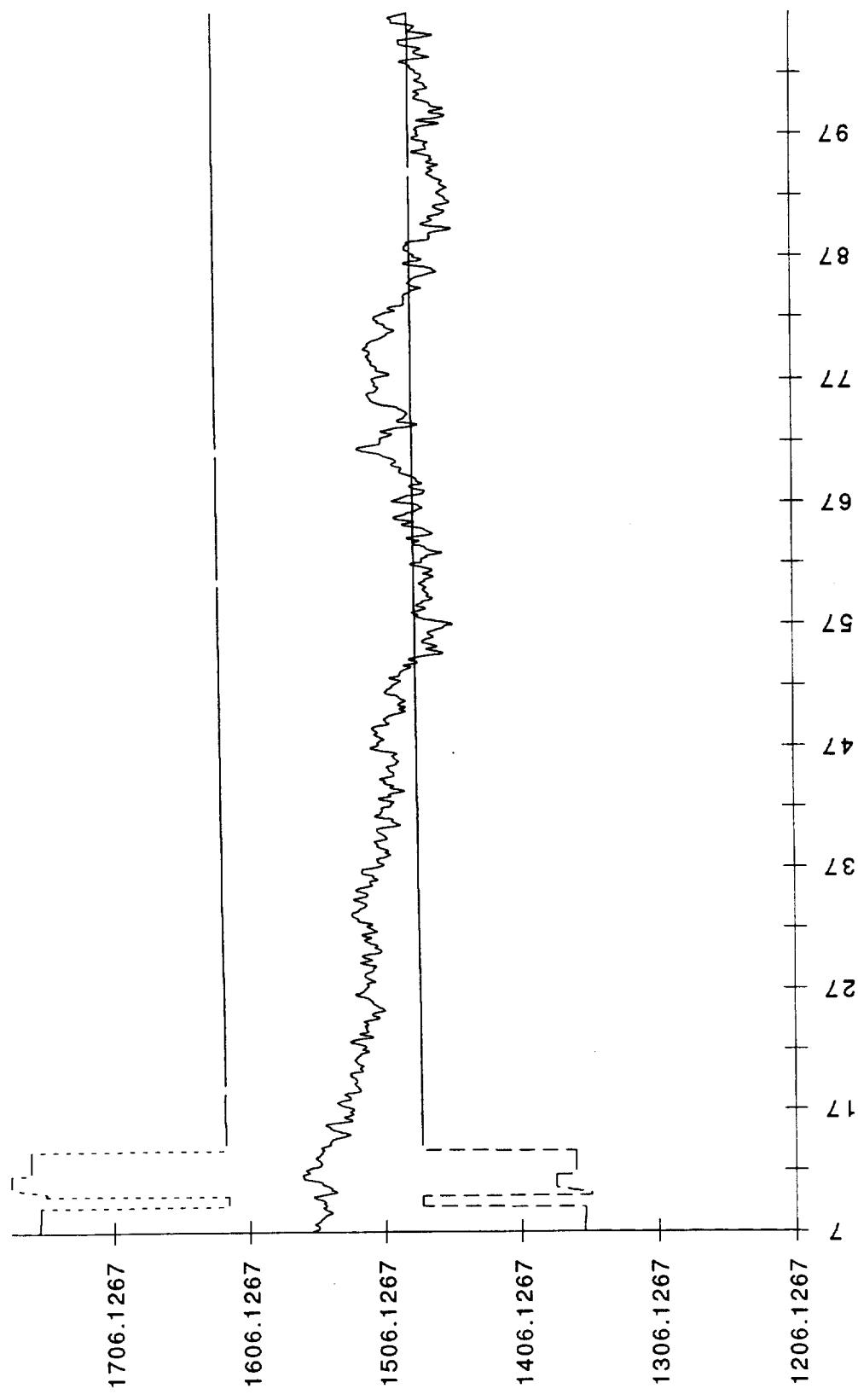


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3134.4619

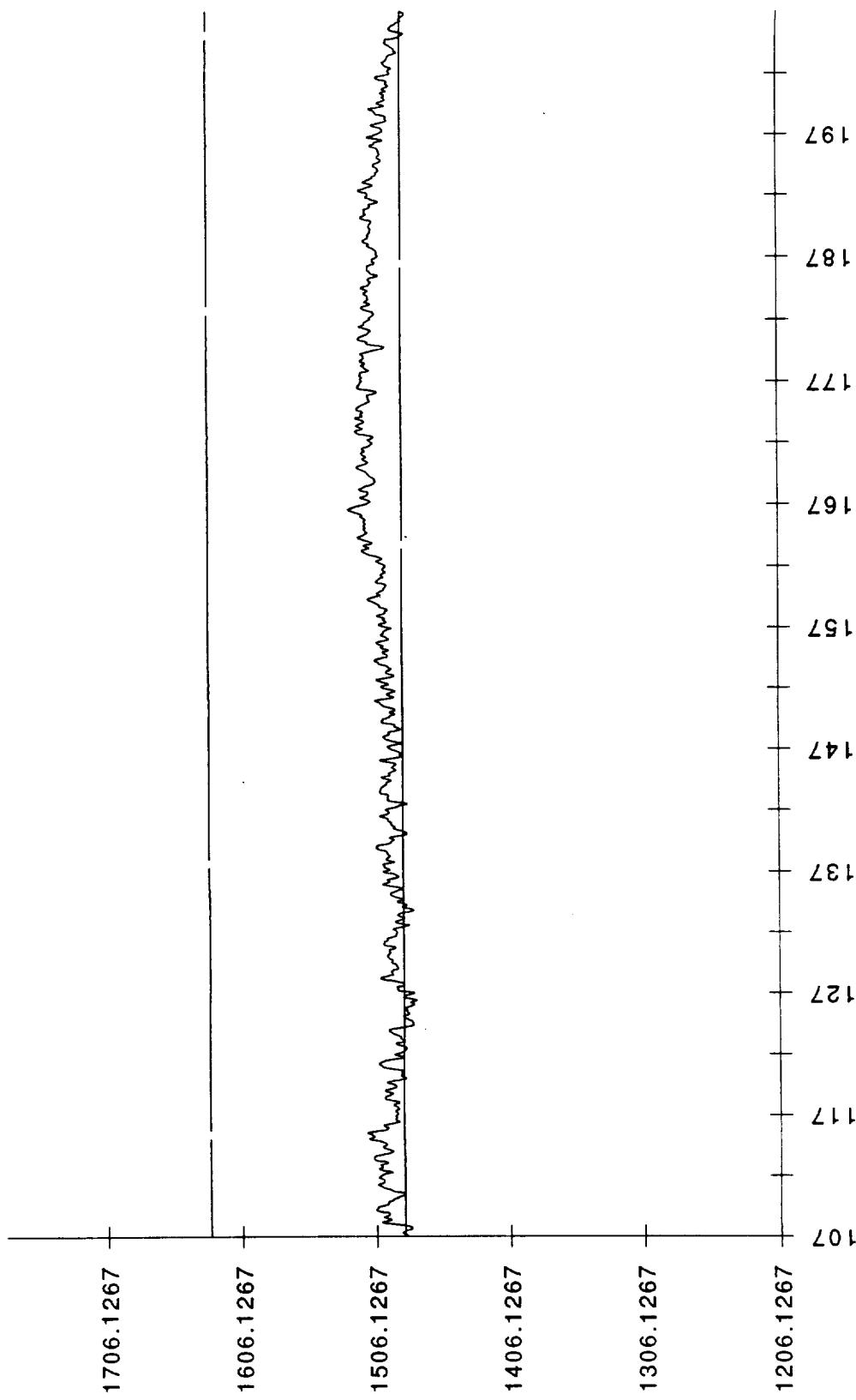
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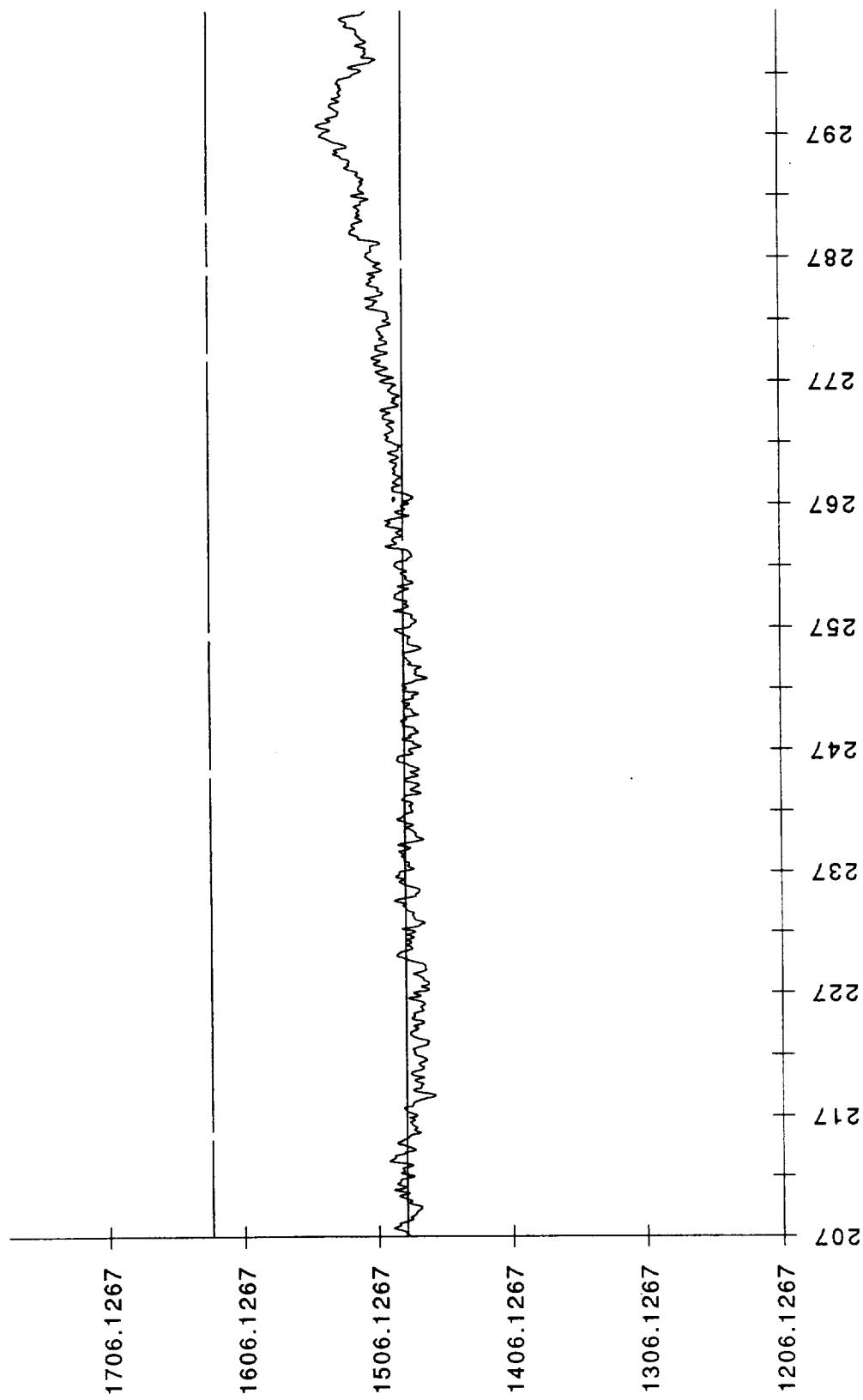
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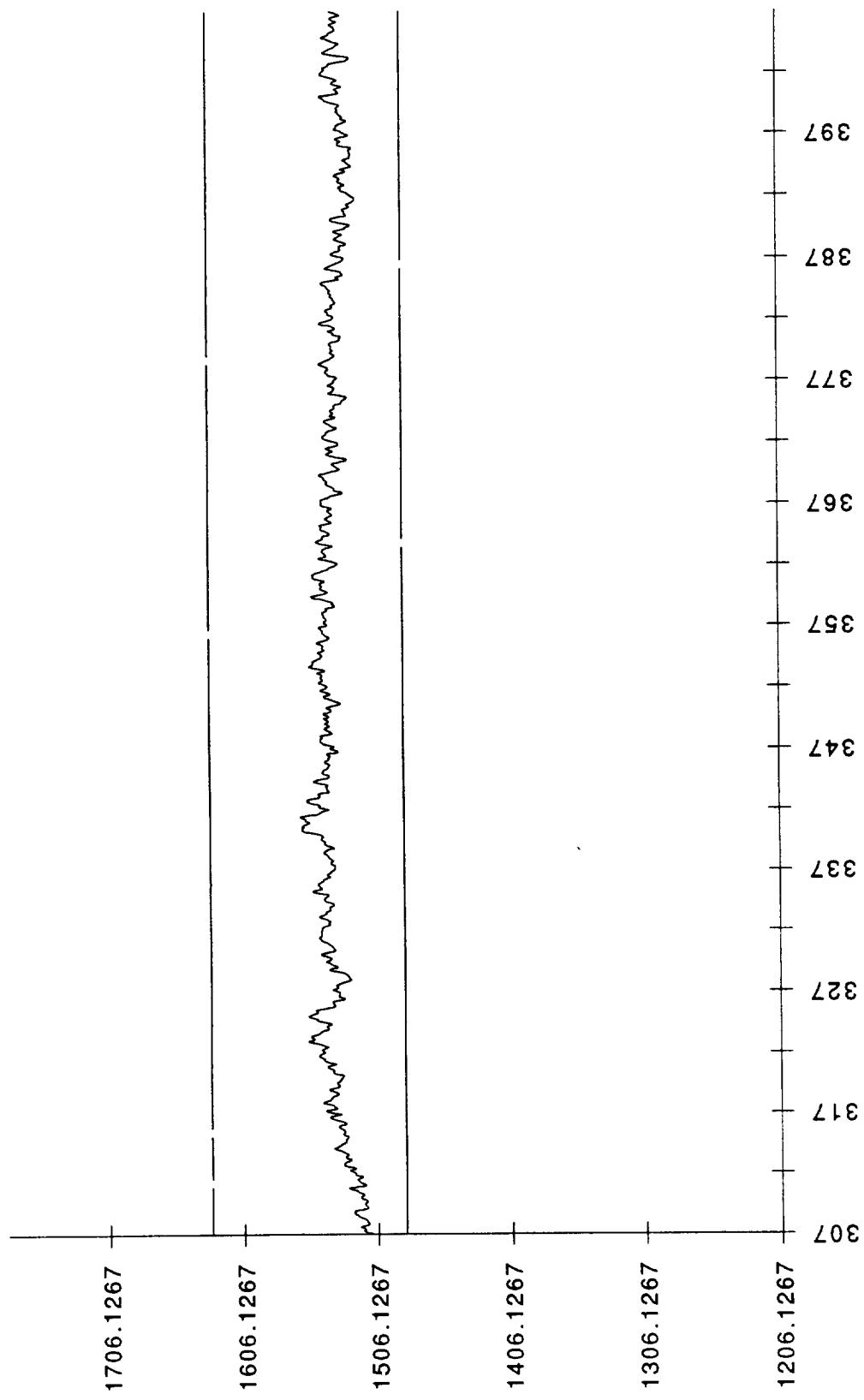
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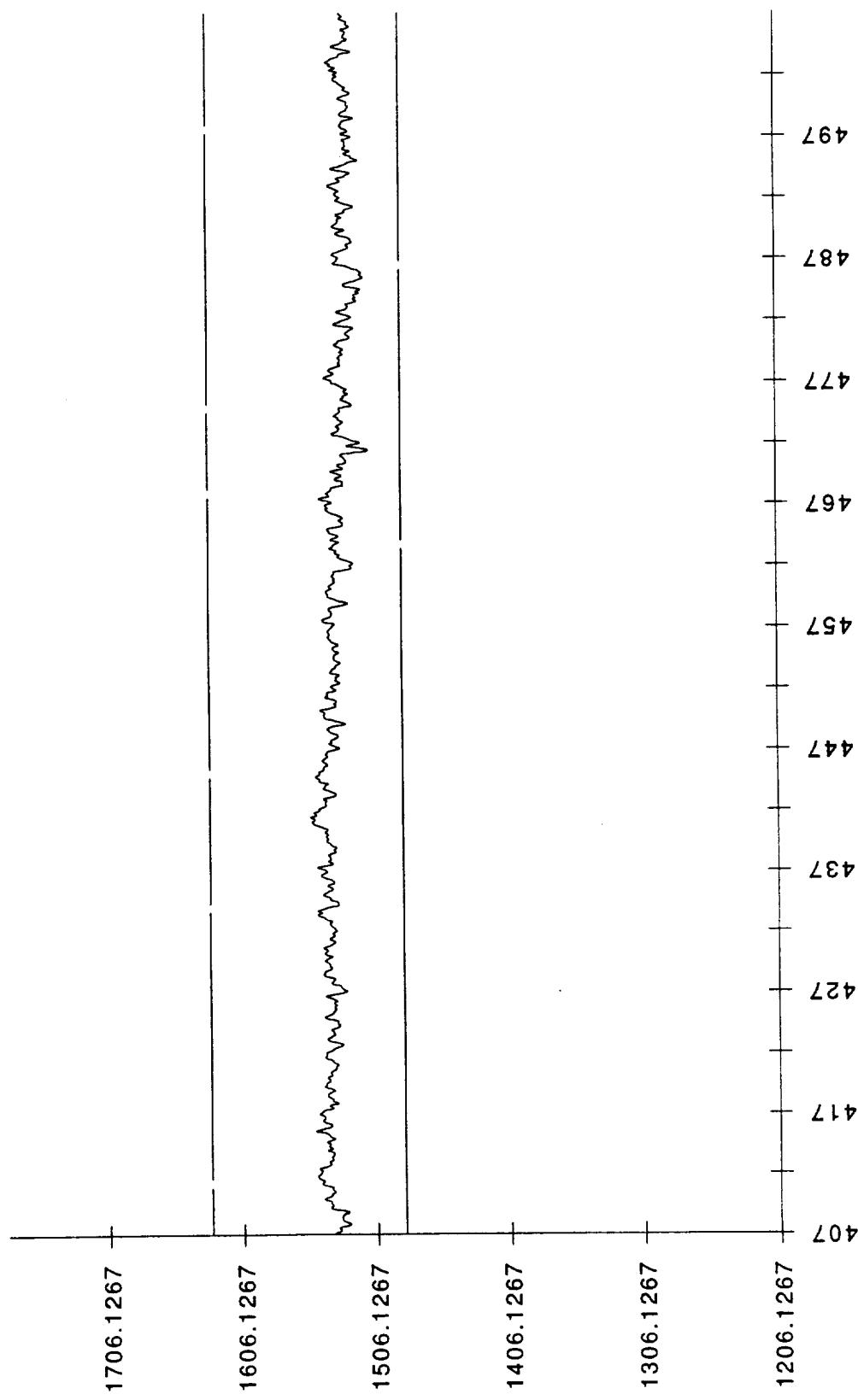
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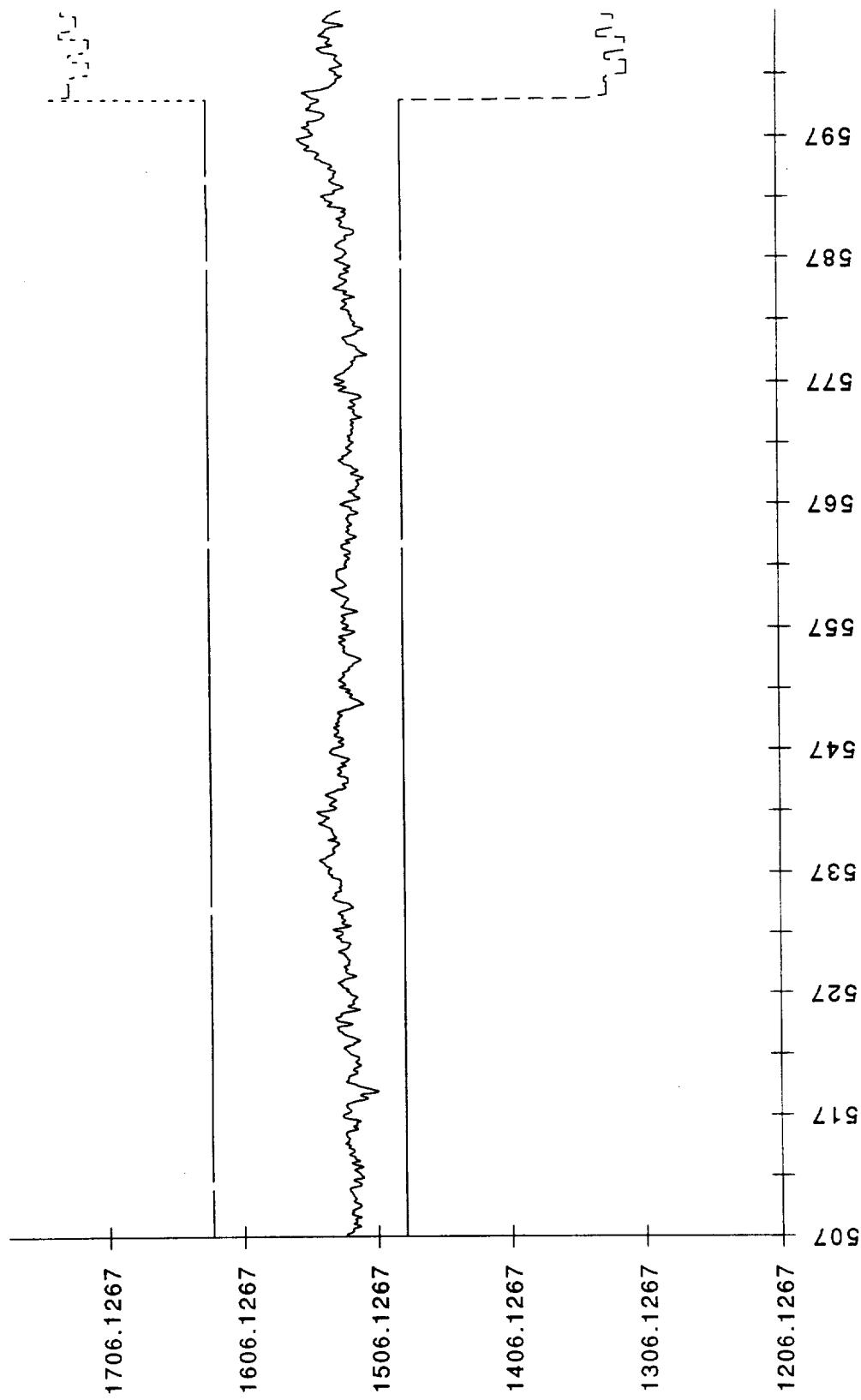
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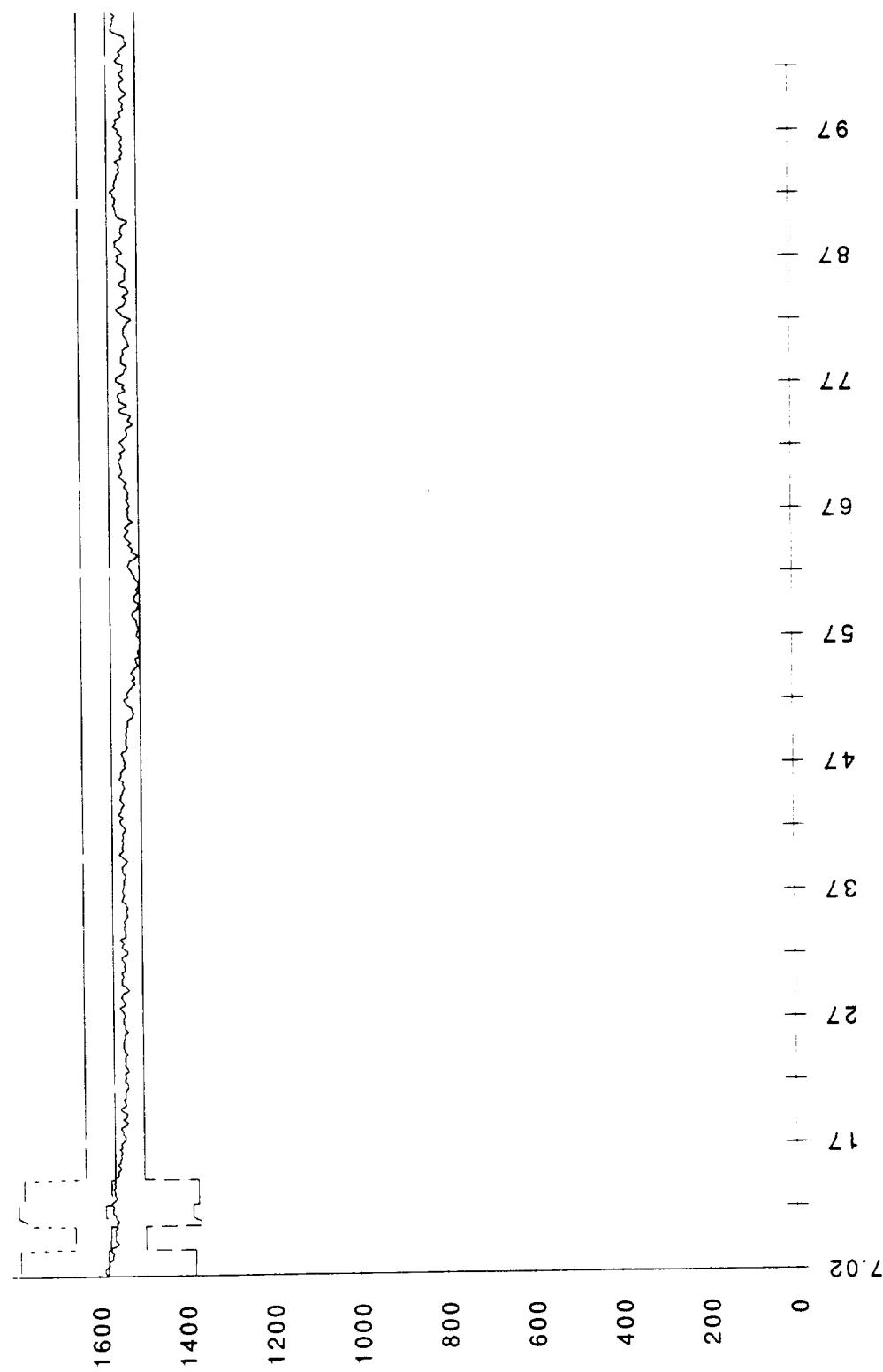
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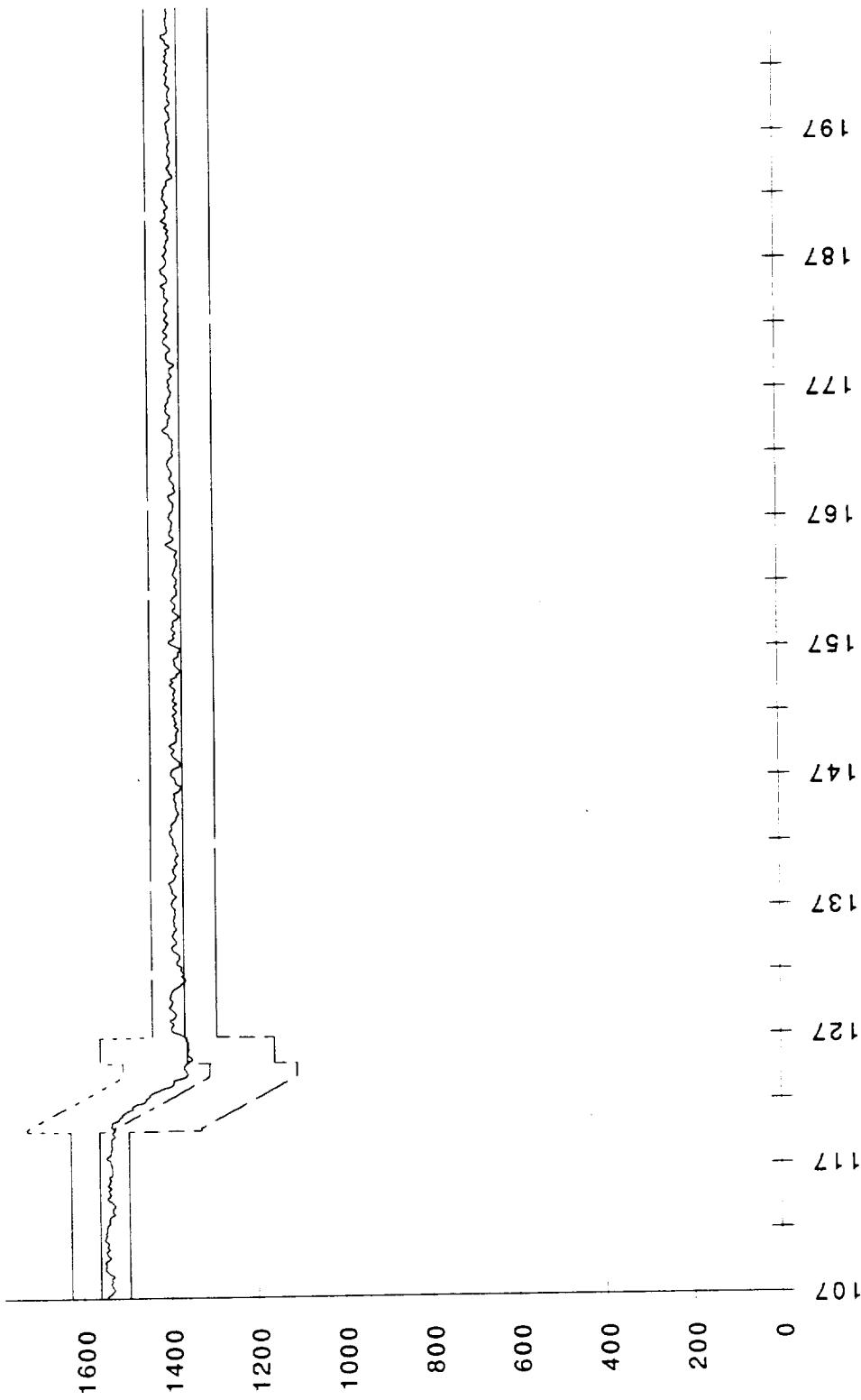
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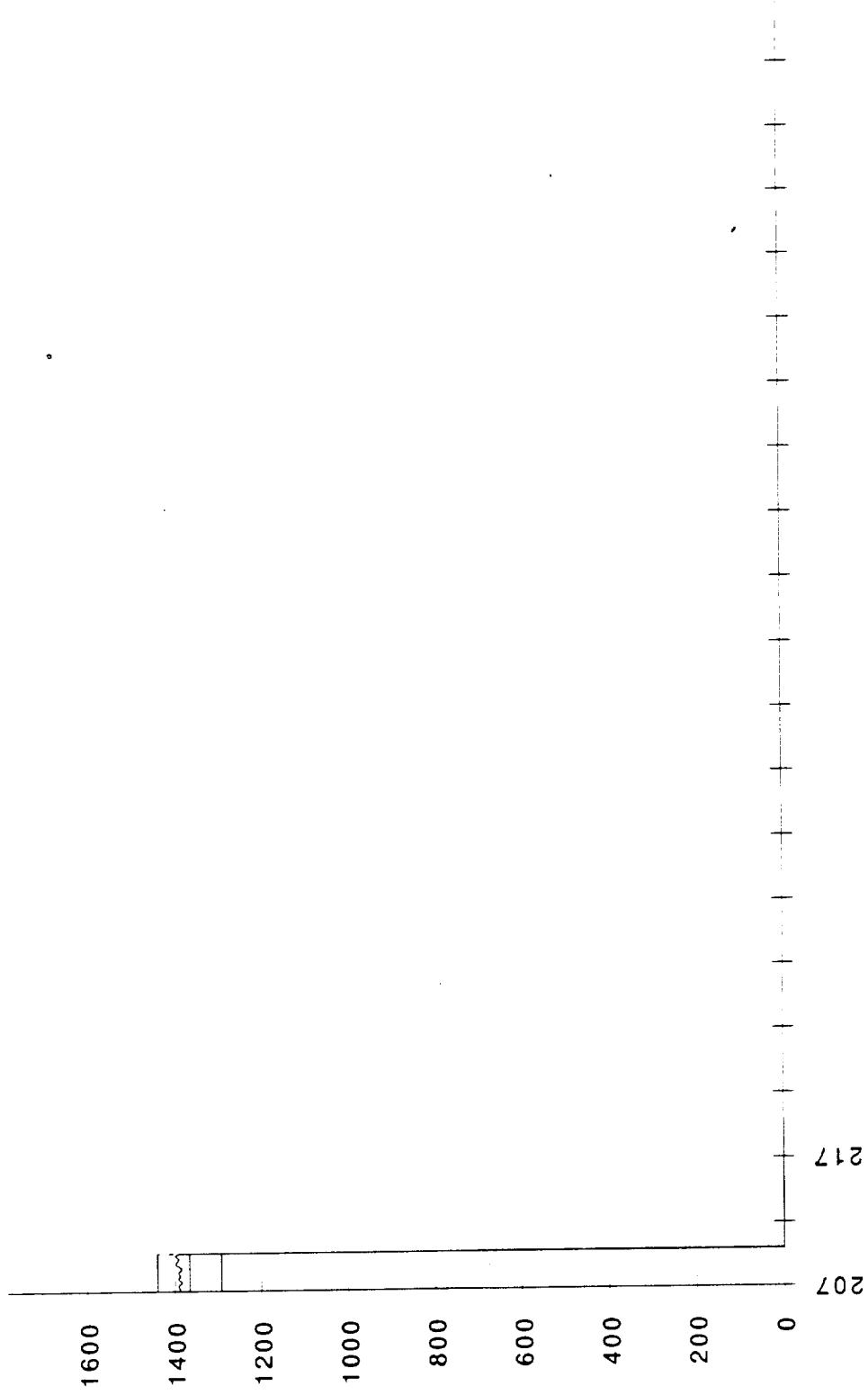
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904-235 HPFP TDT A.T

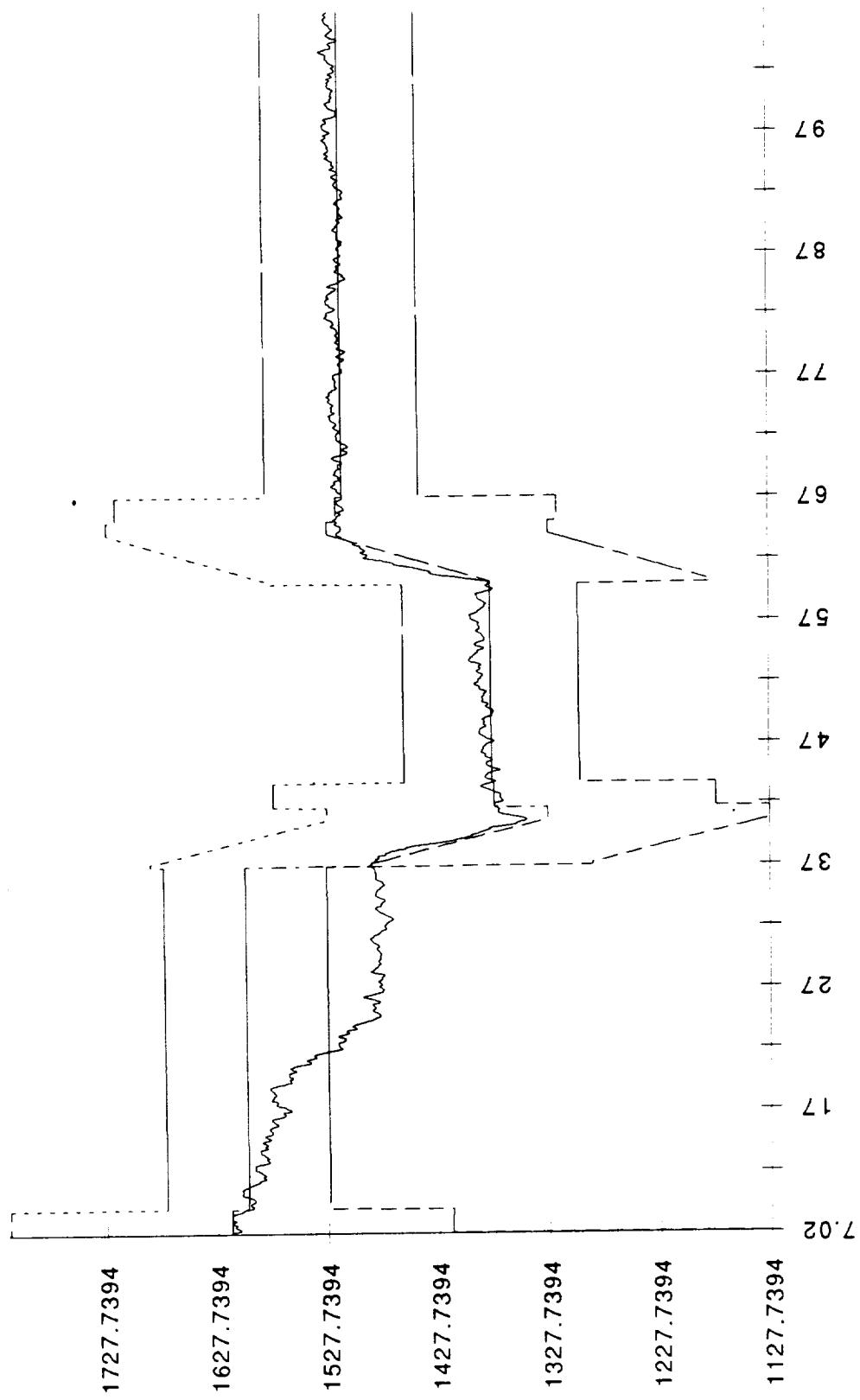
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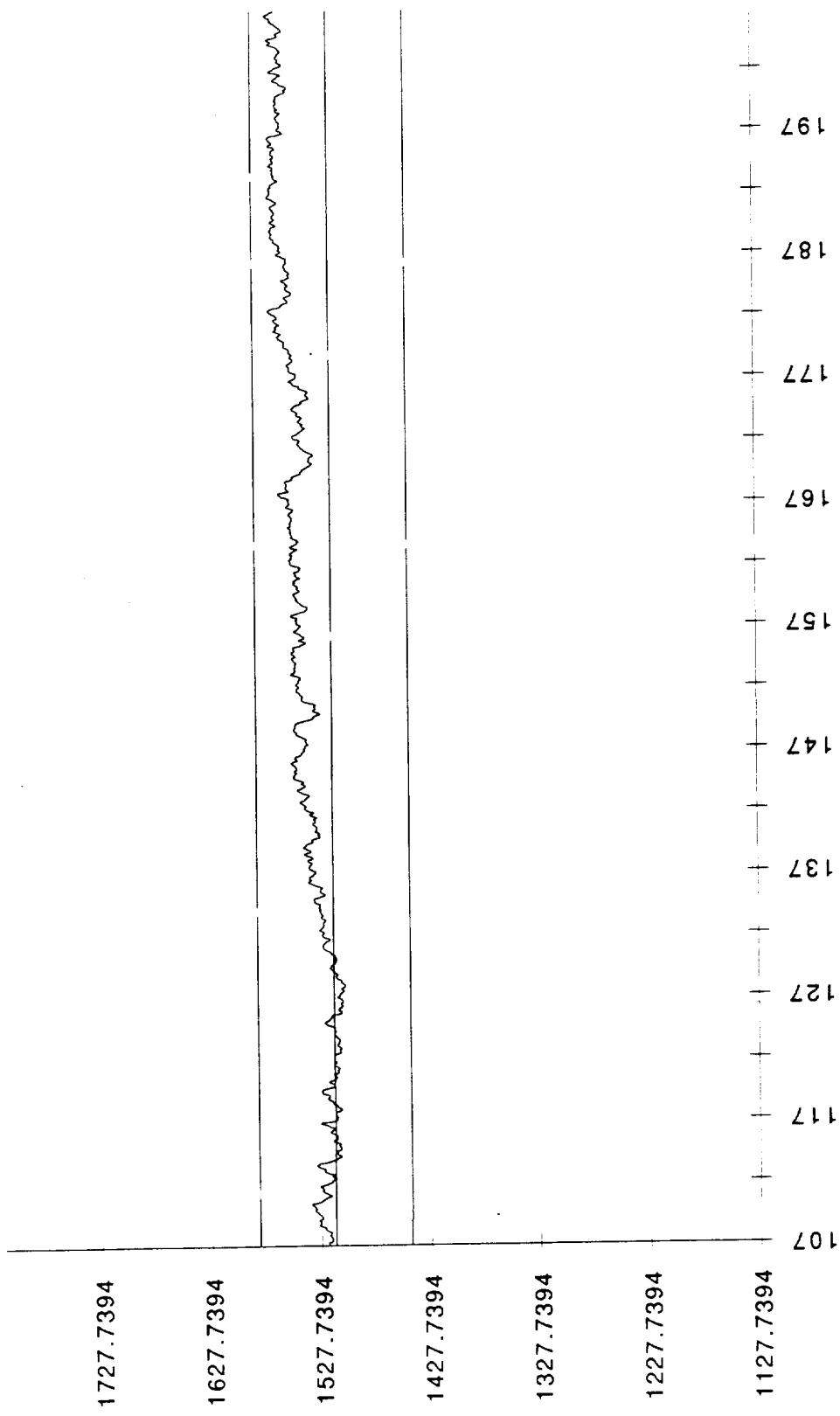
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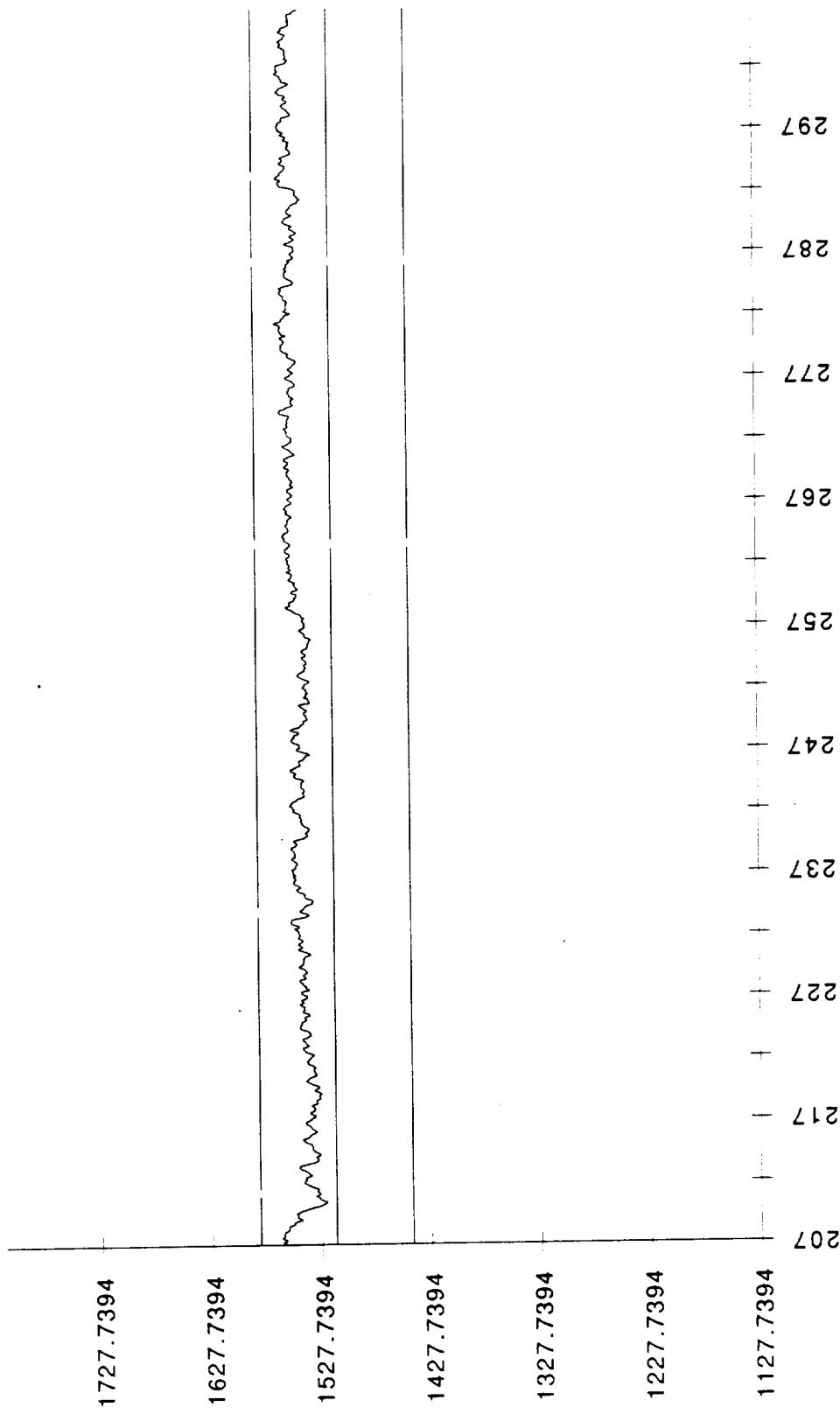
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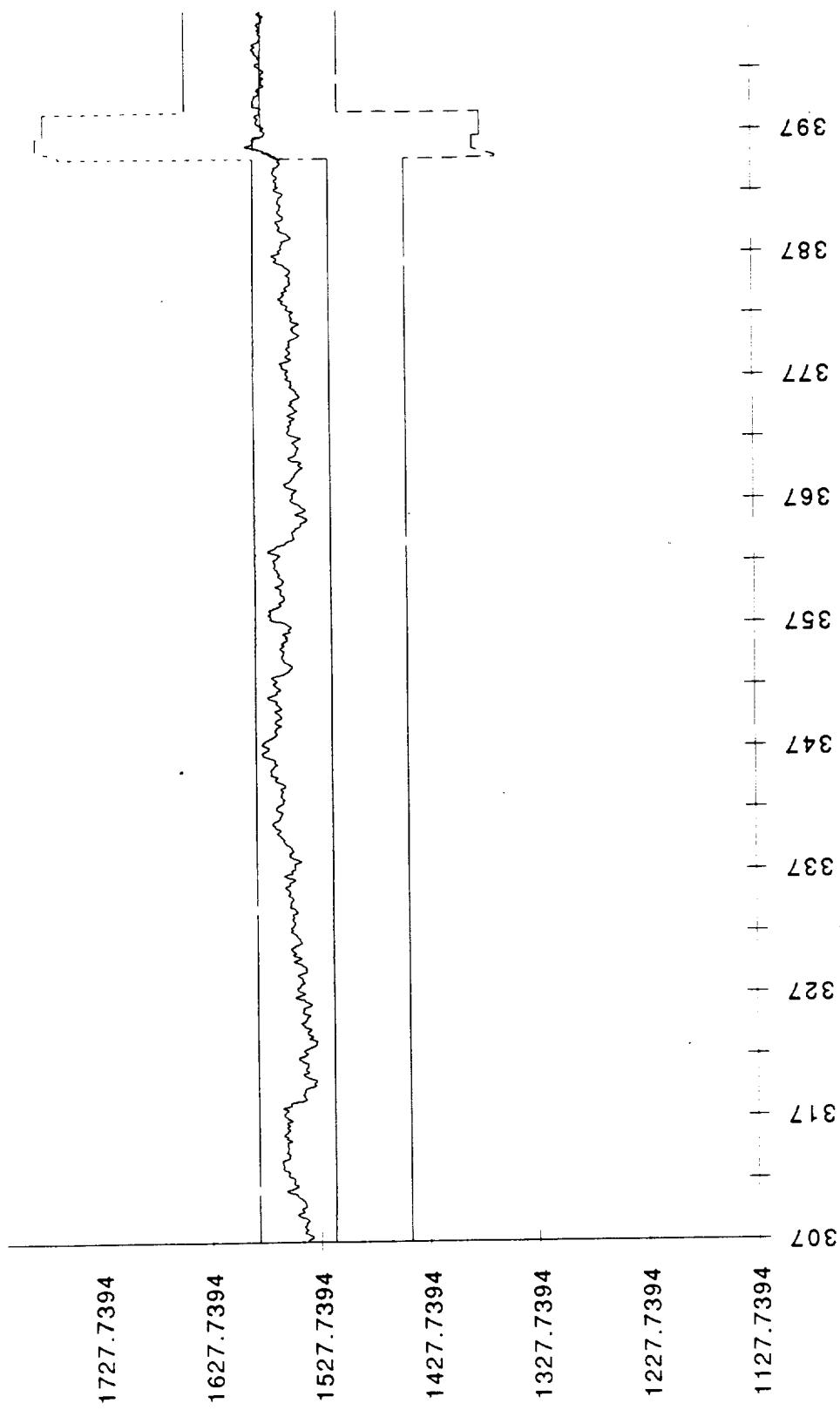
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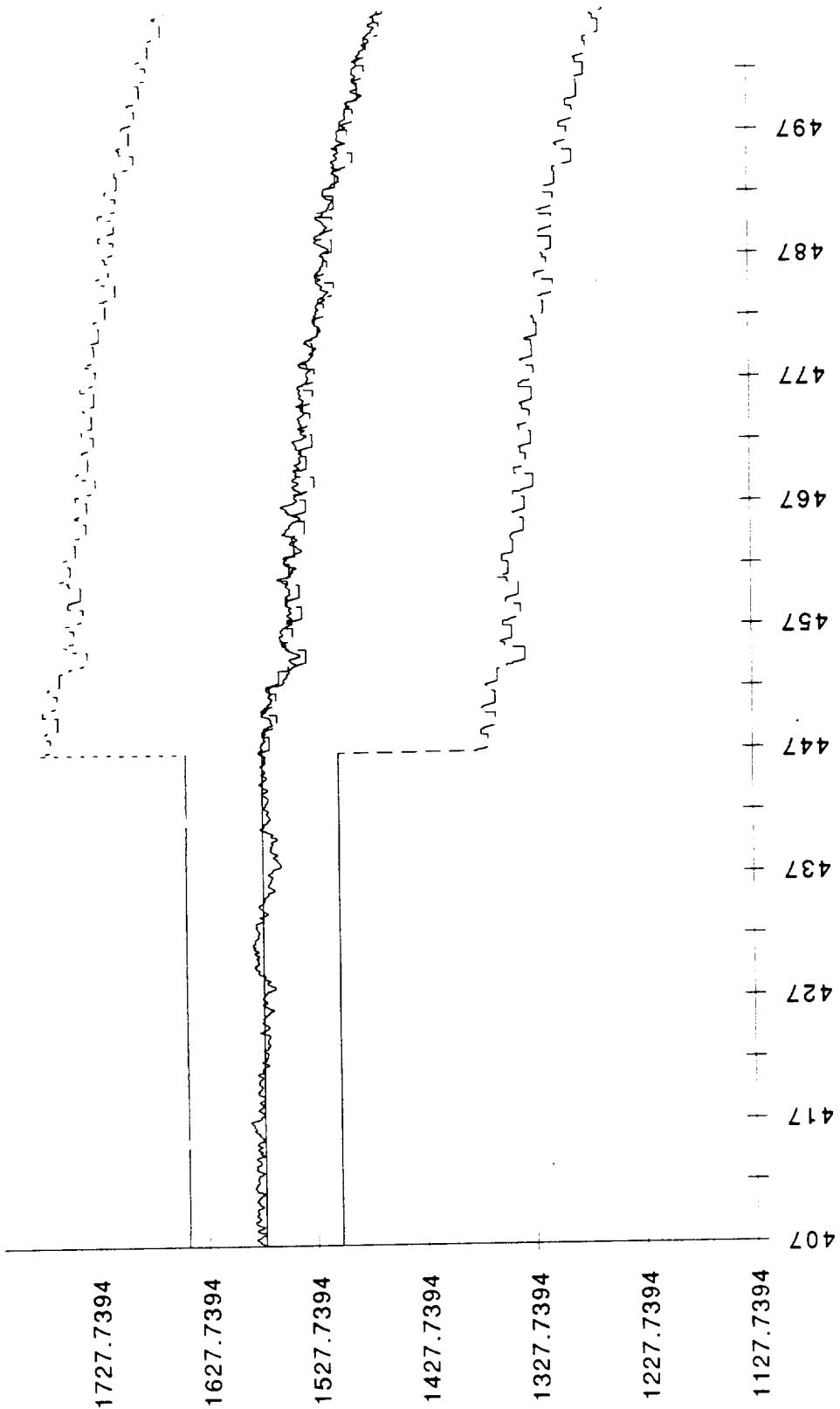
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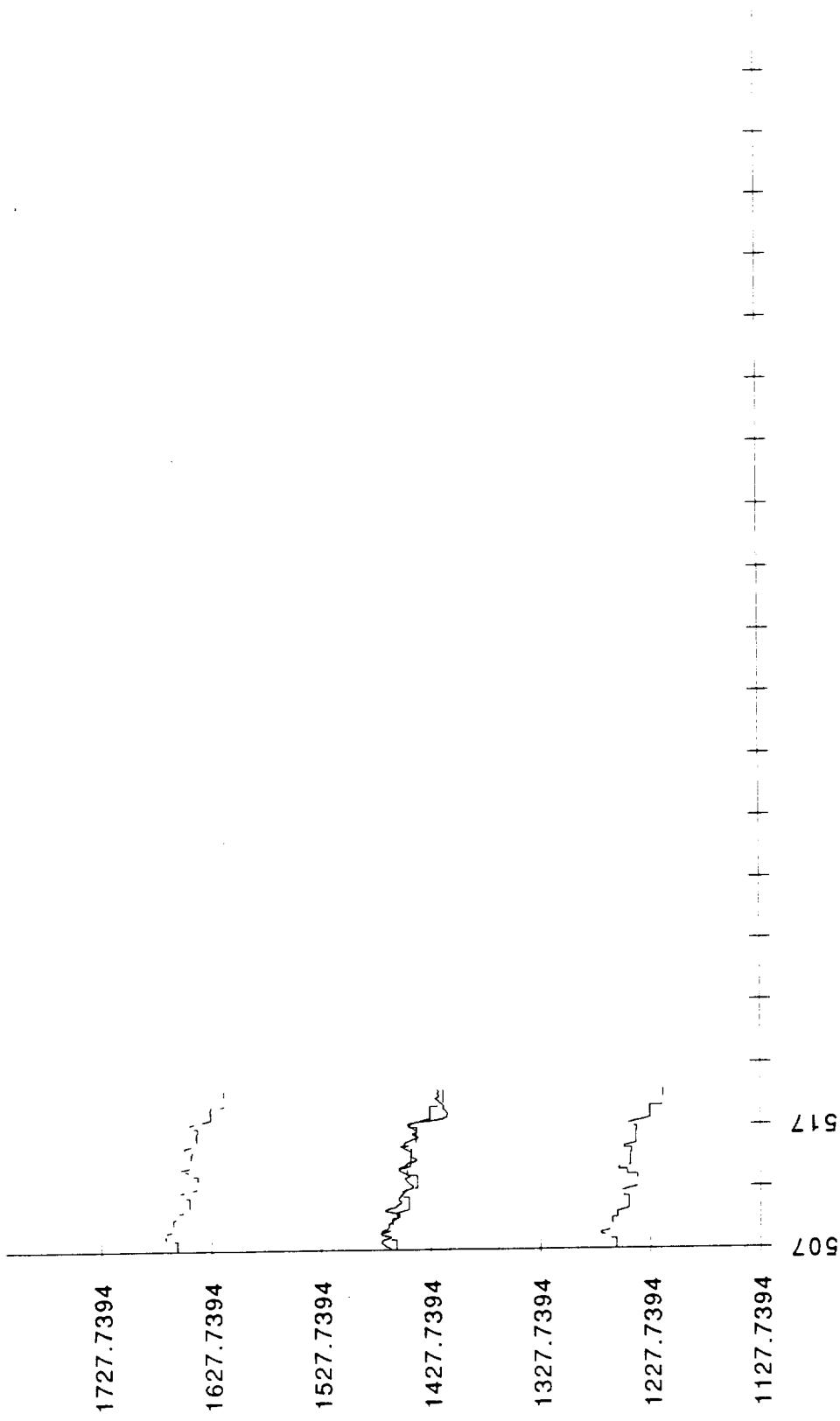
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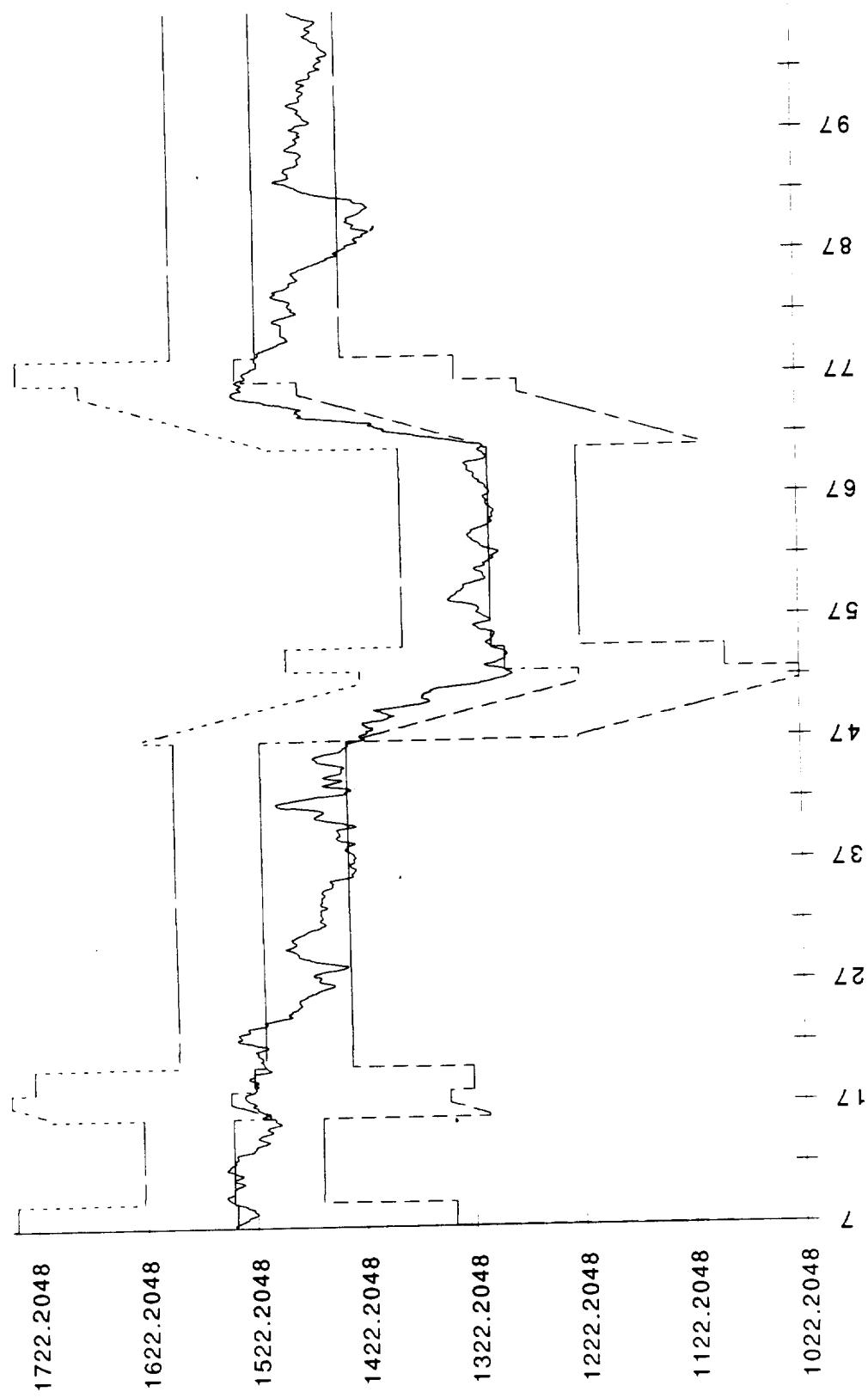


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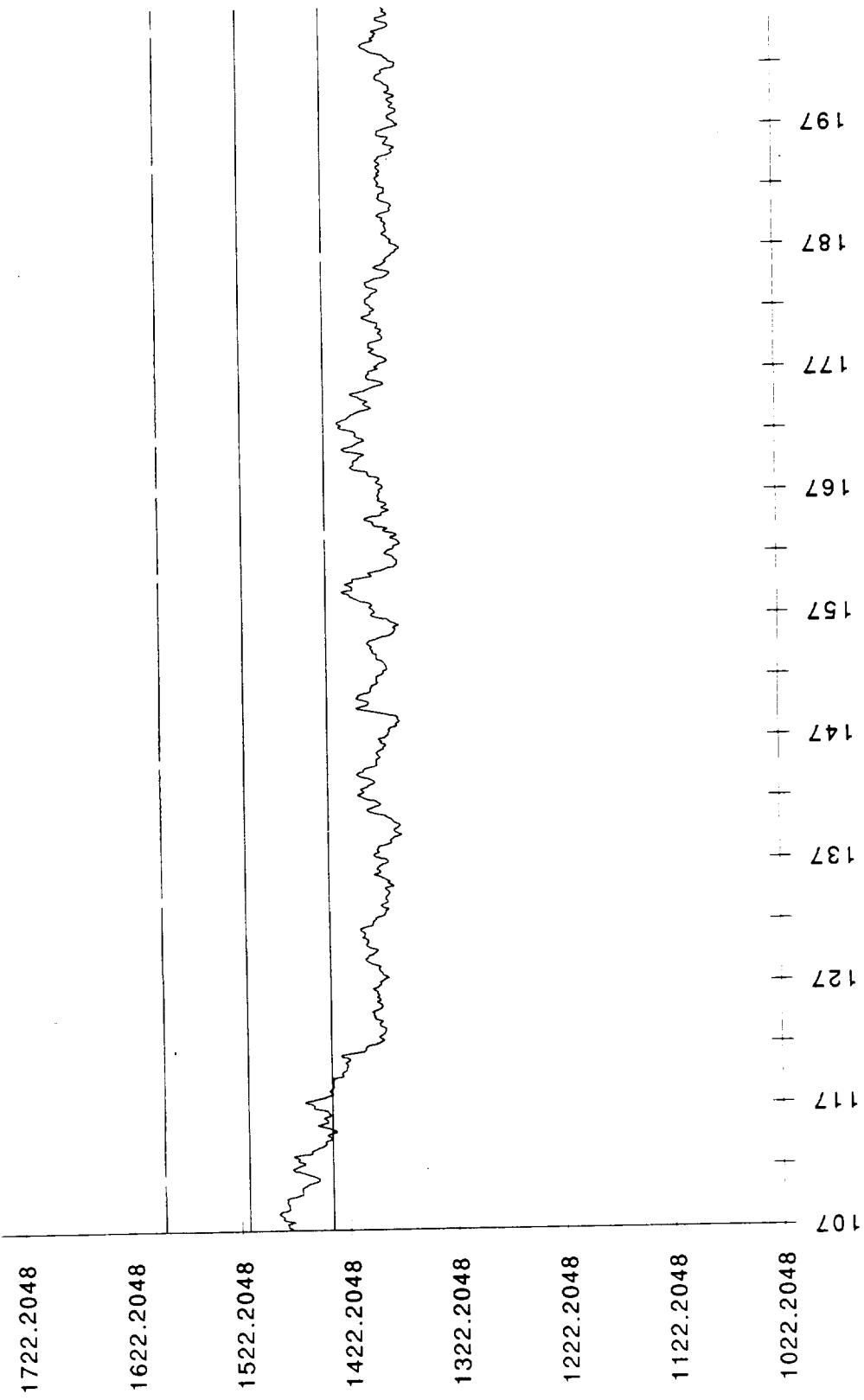
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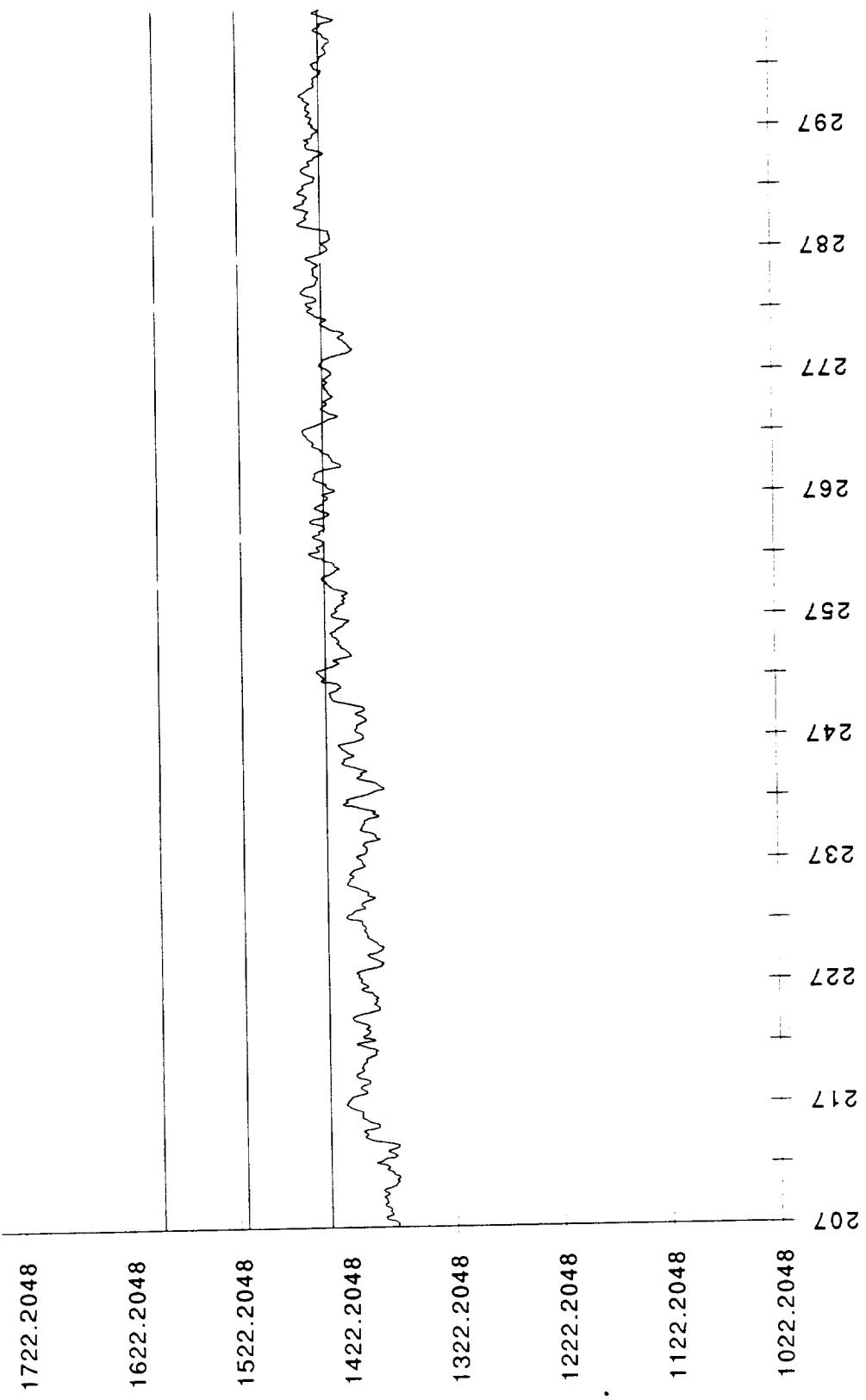
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904.242 HPFP TDT B.T



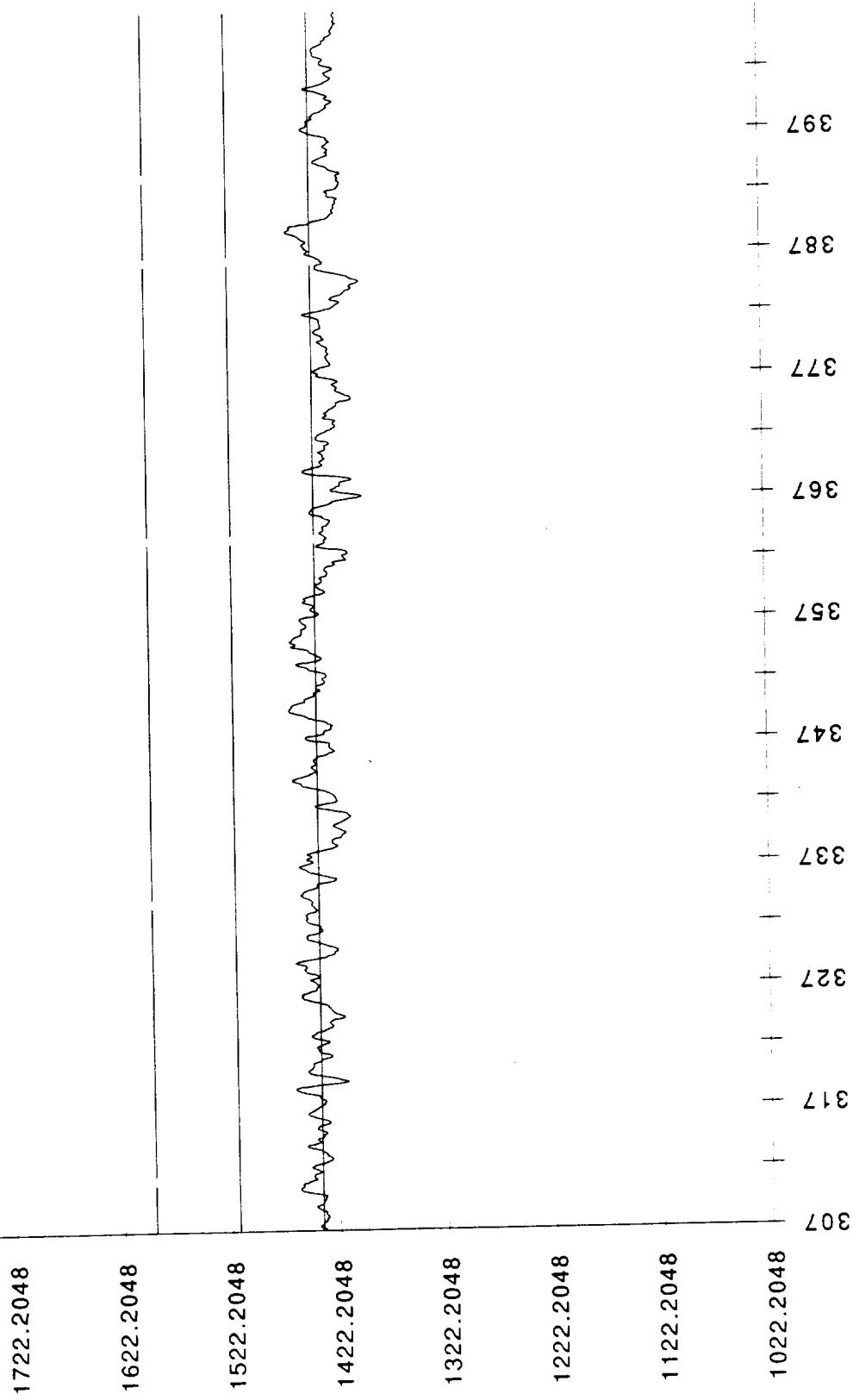
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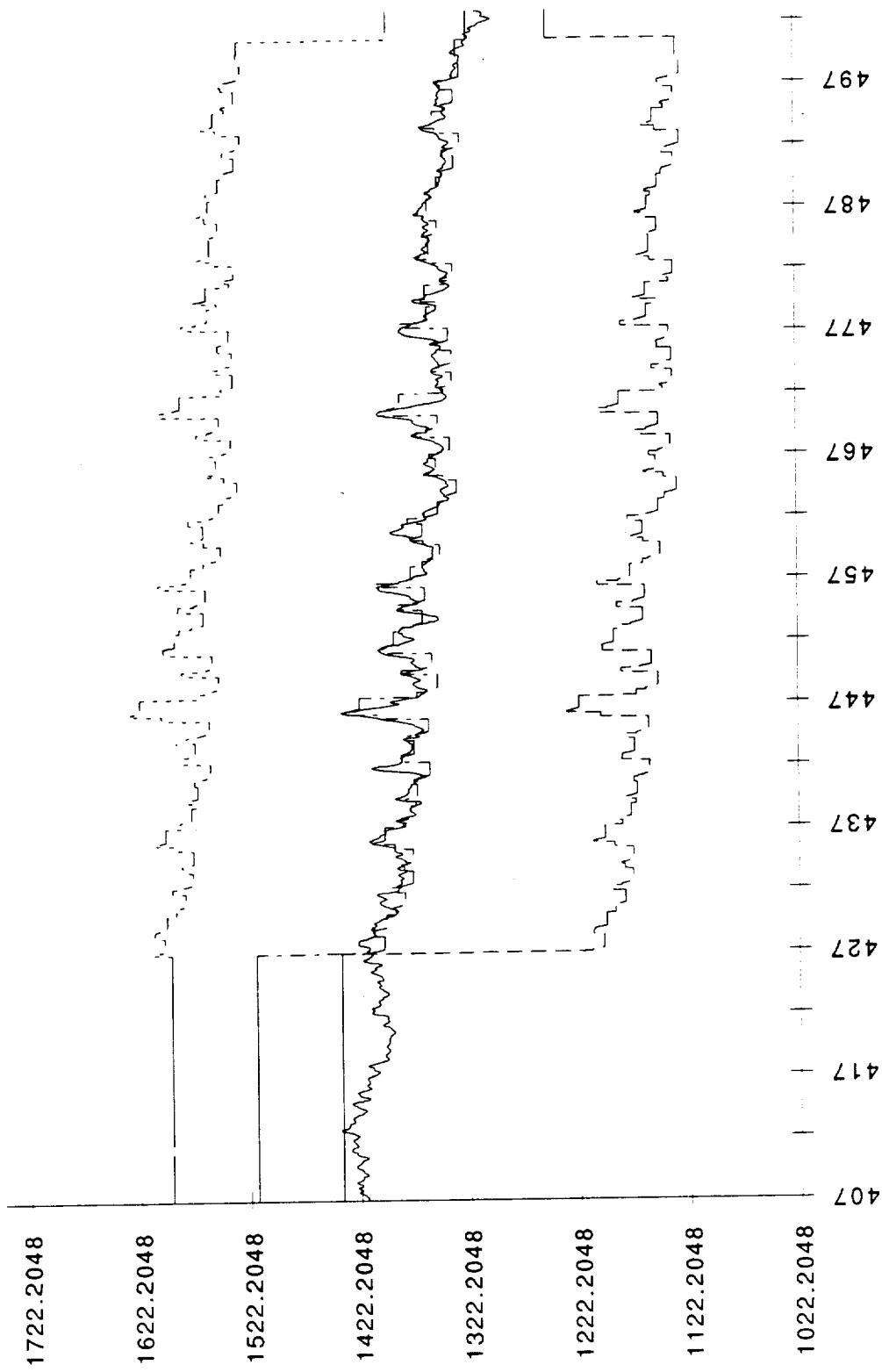
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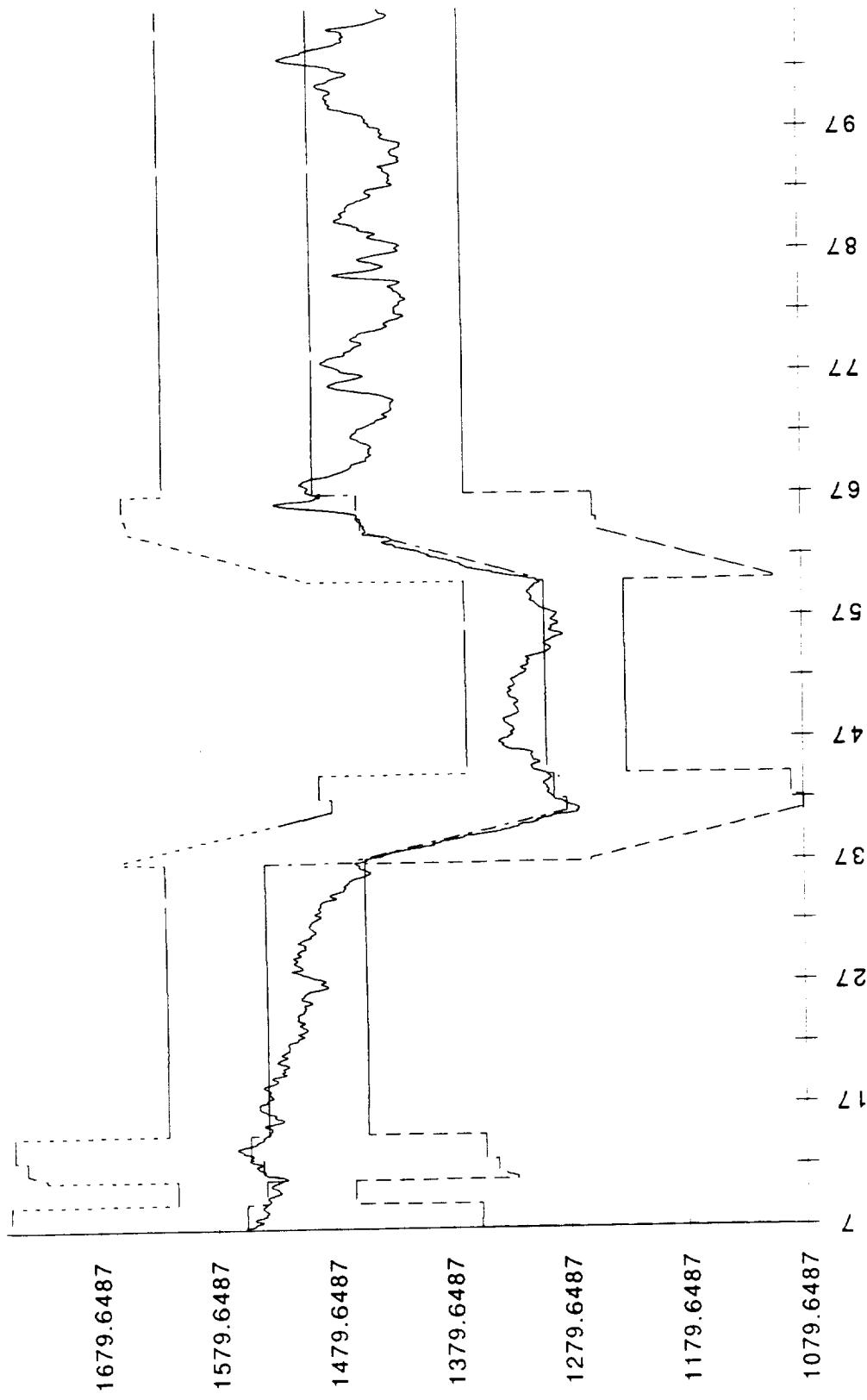
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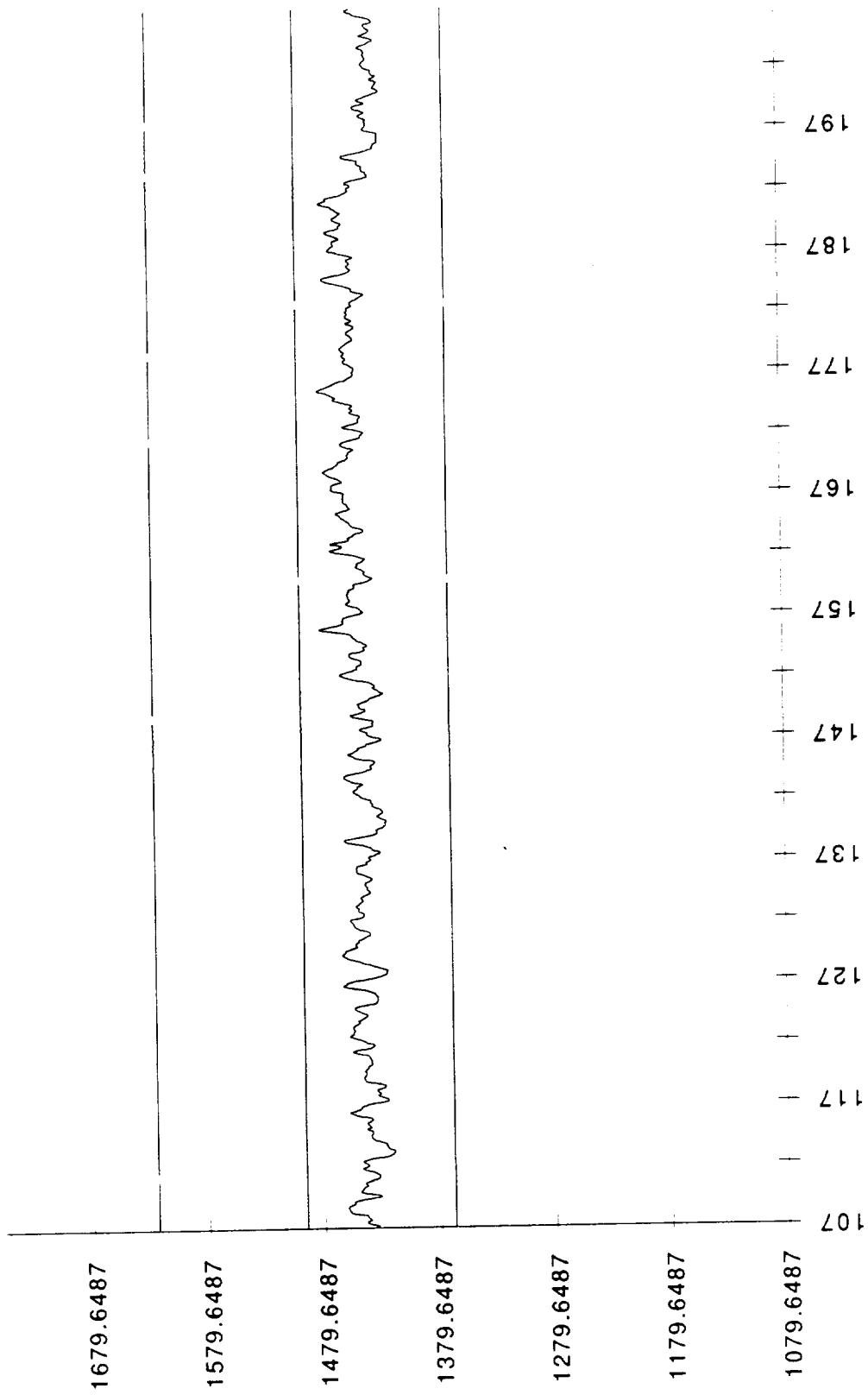
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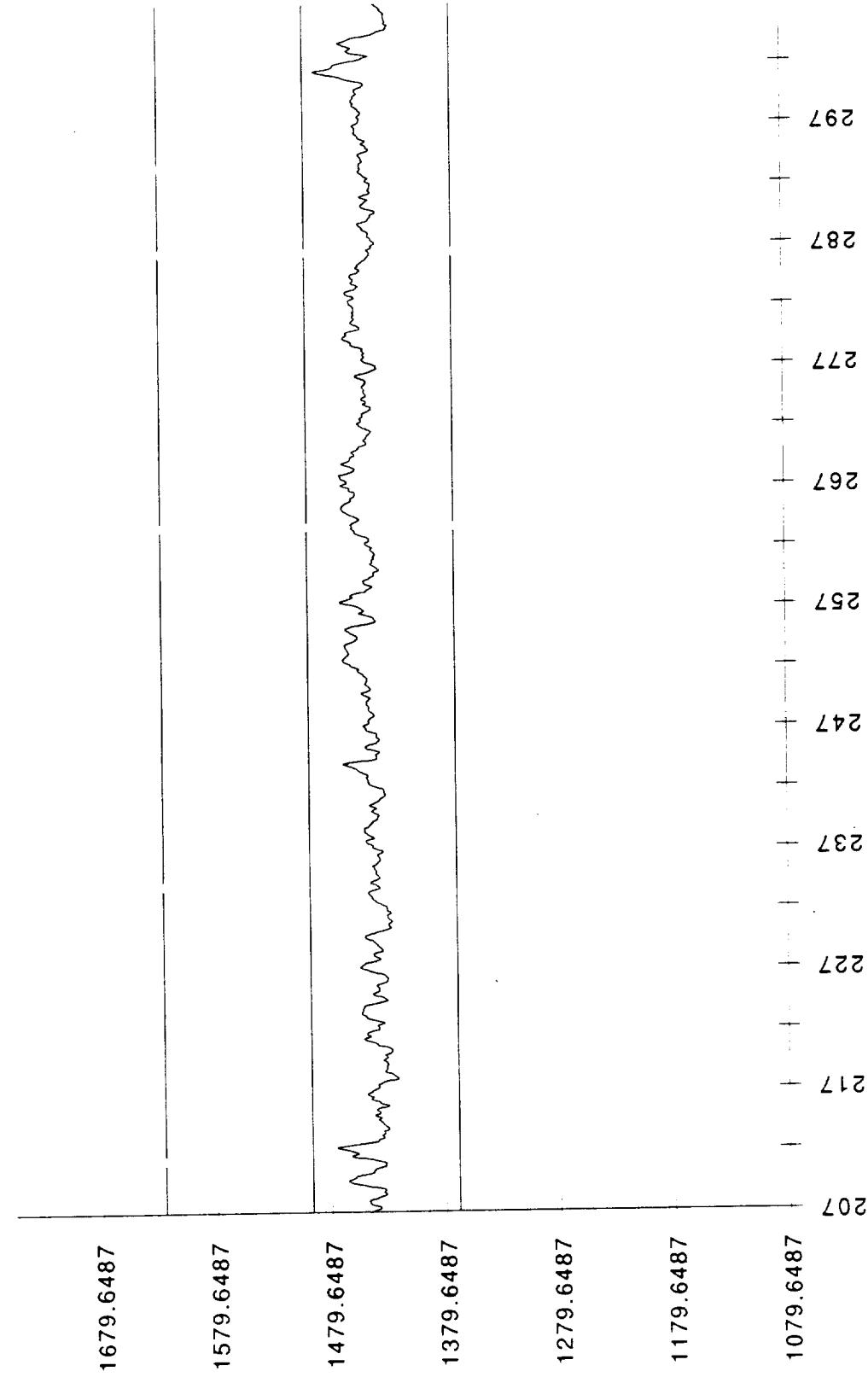
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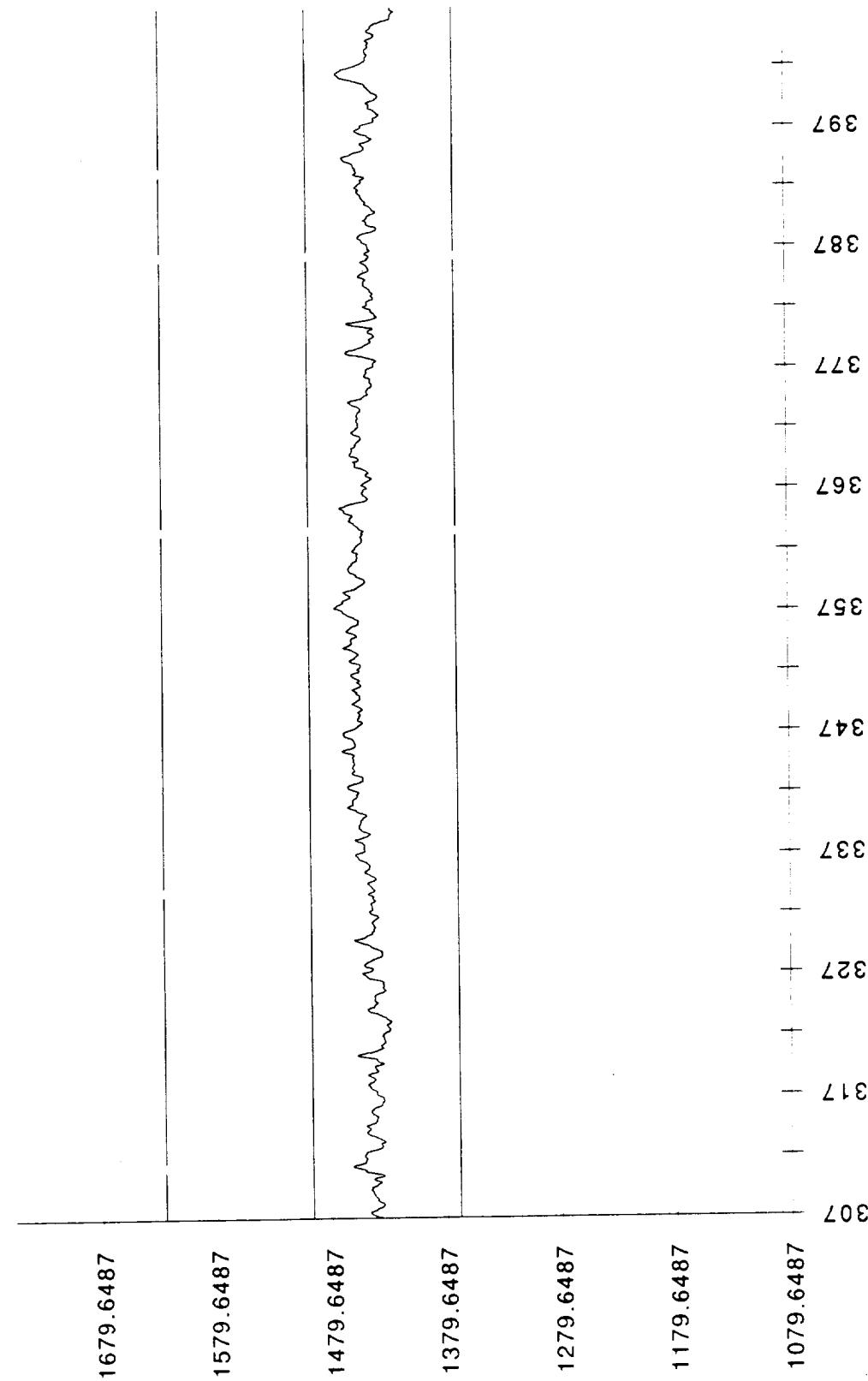
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904-243 HPFP TDT B.T



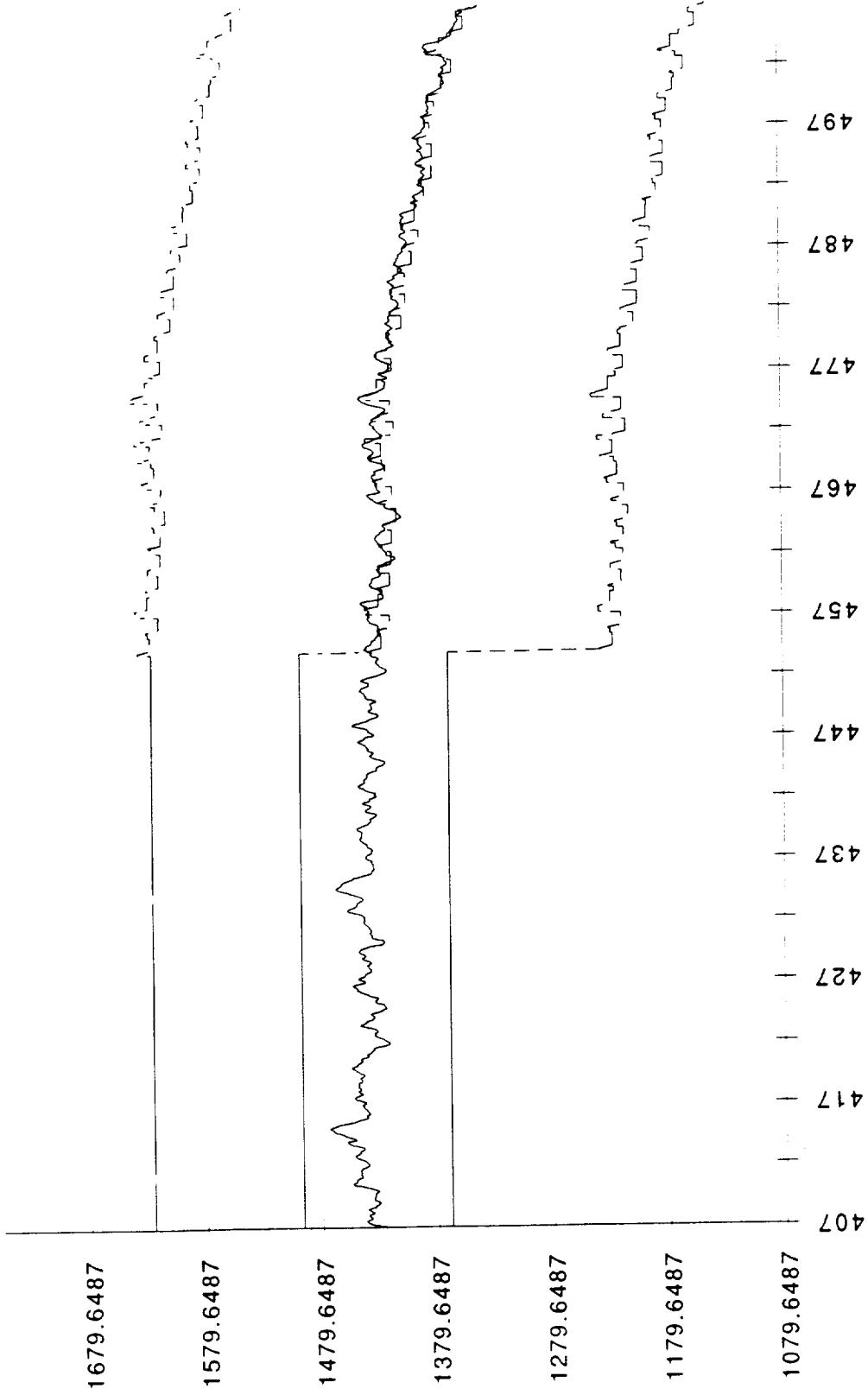
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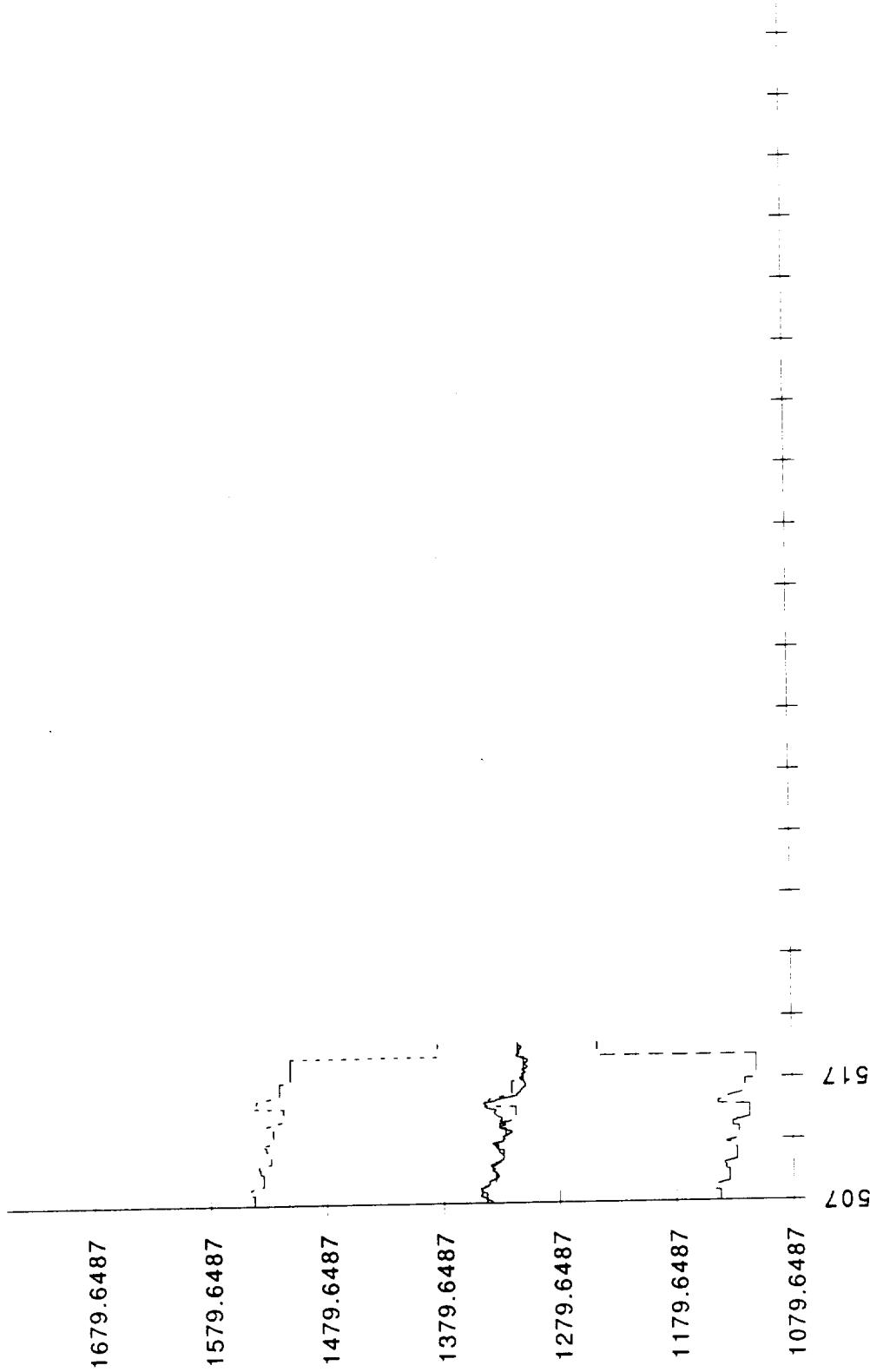
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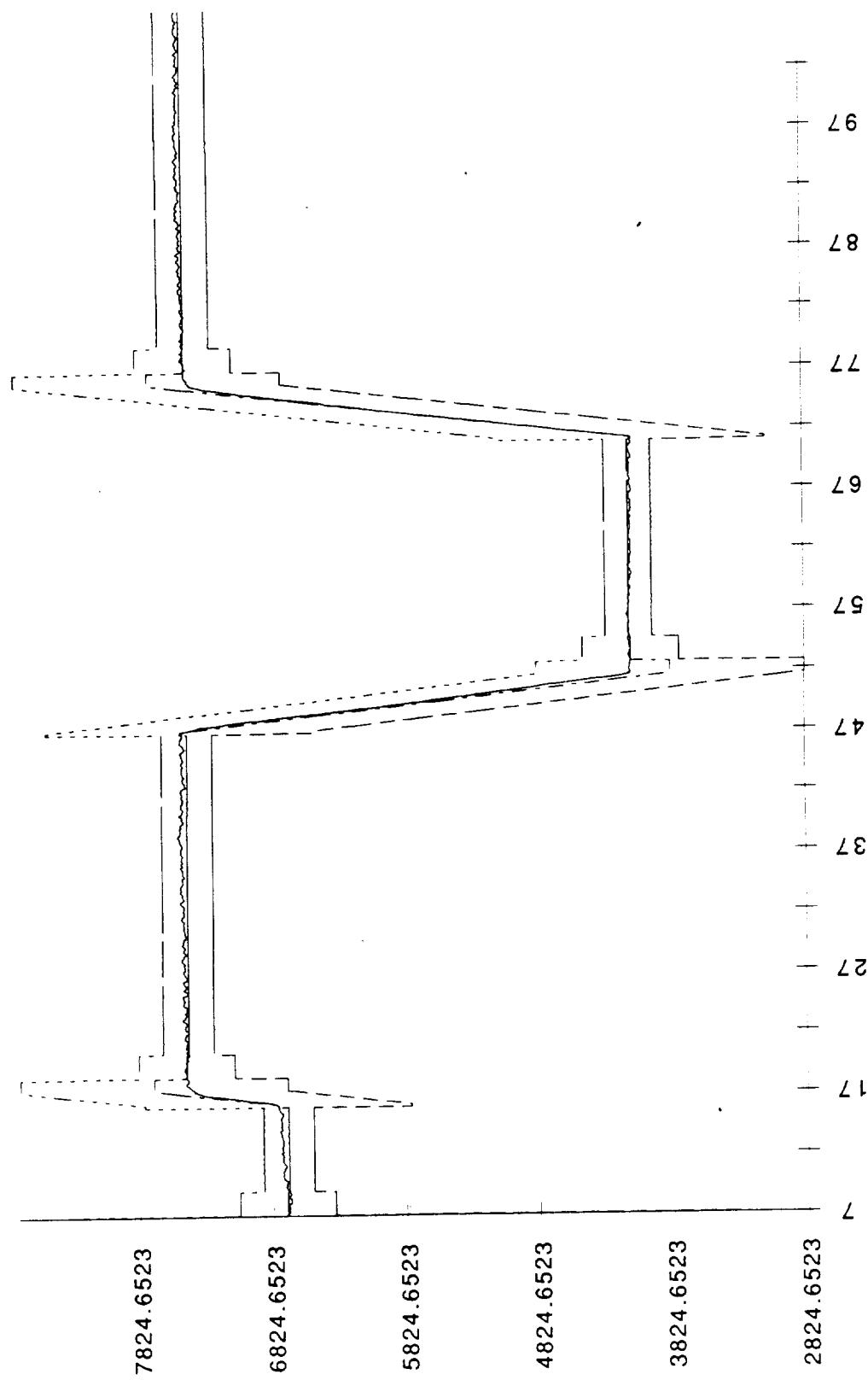
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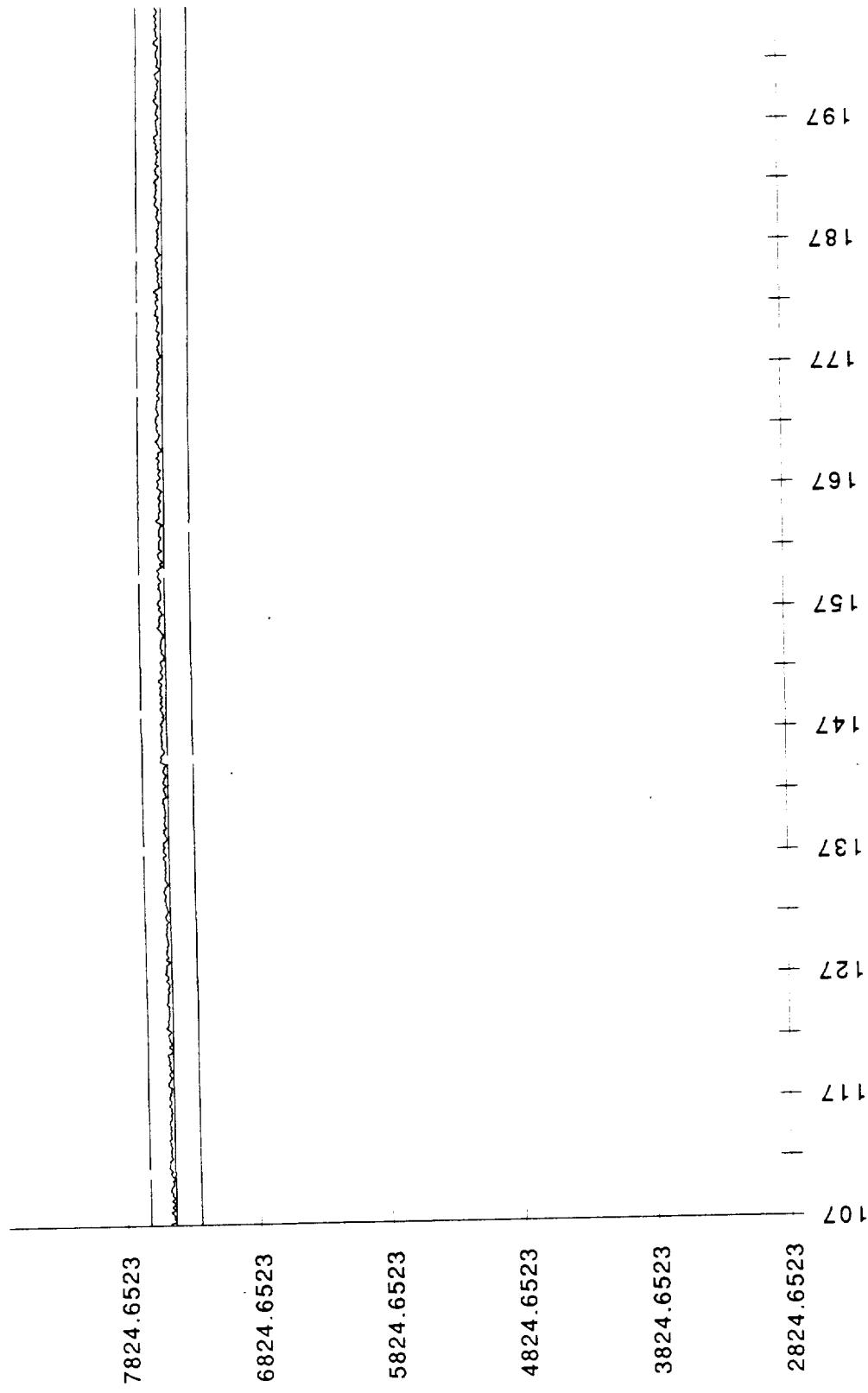
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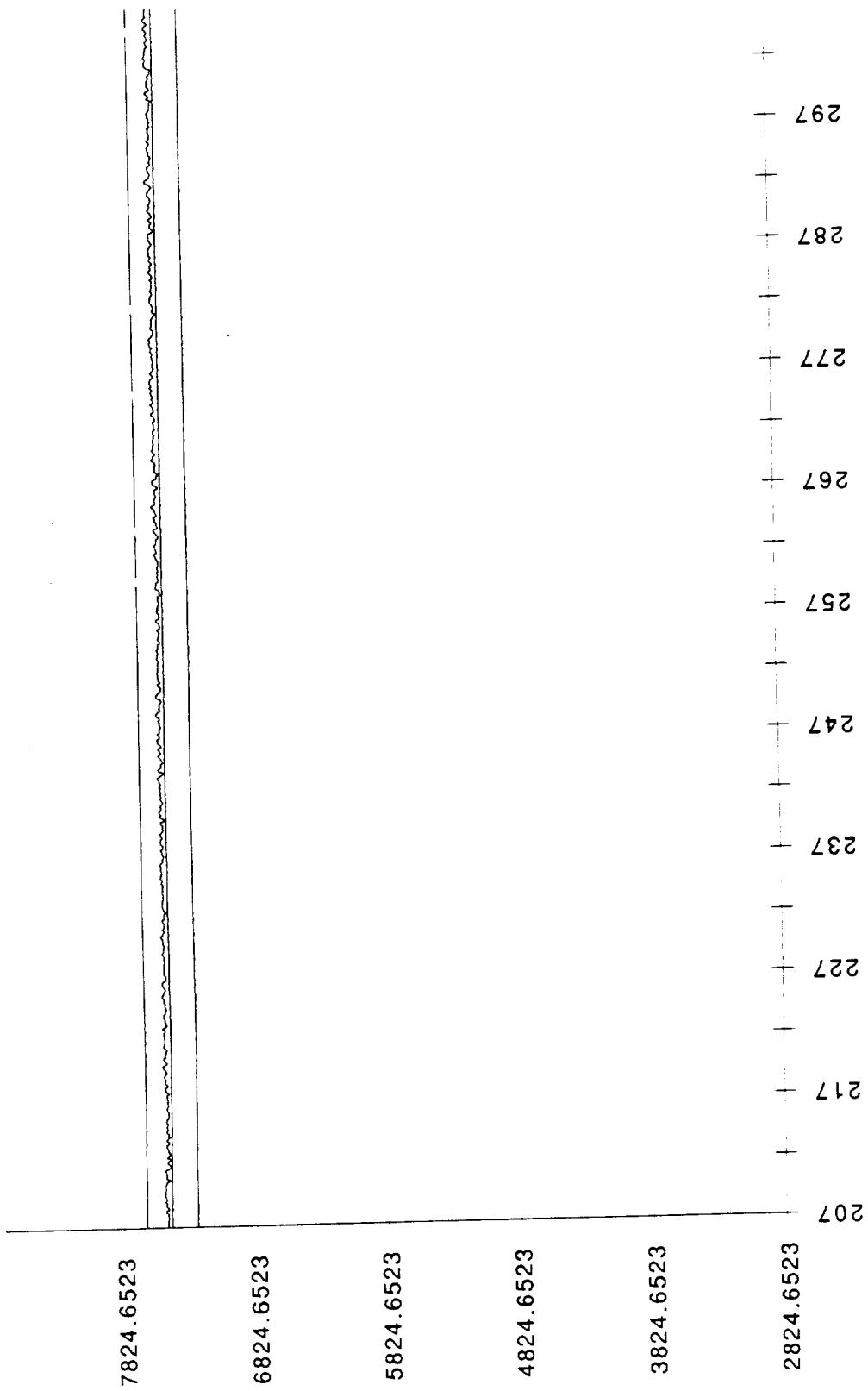


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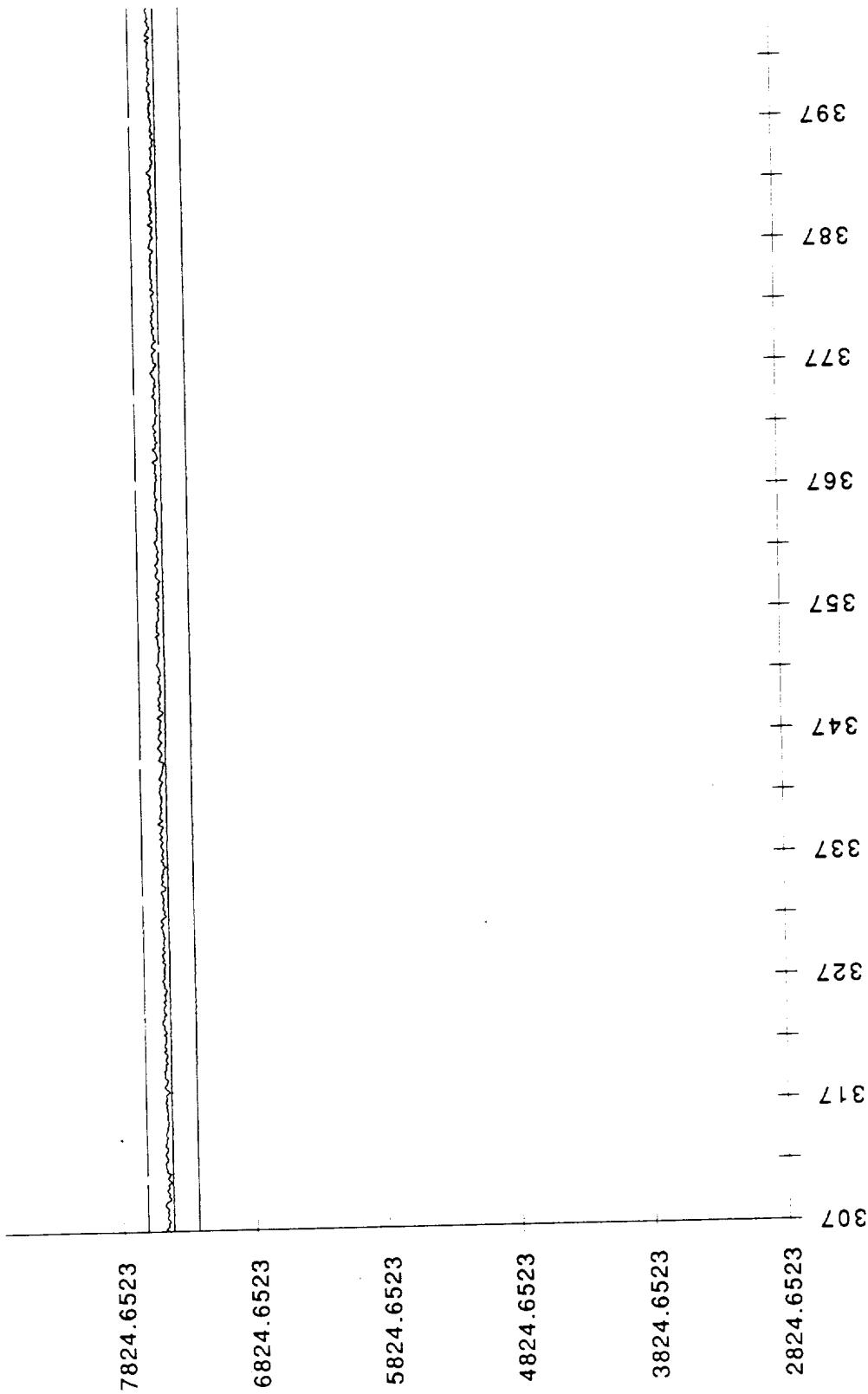
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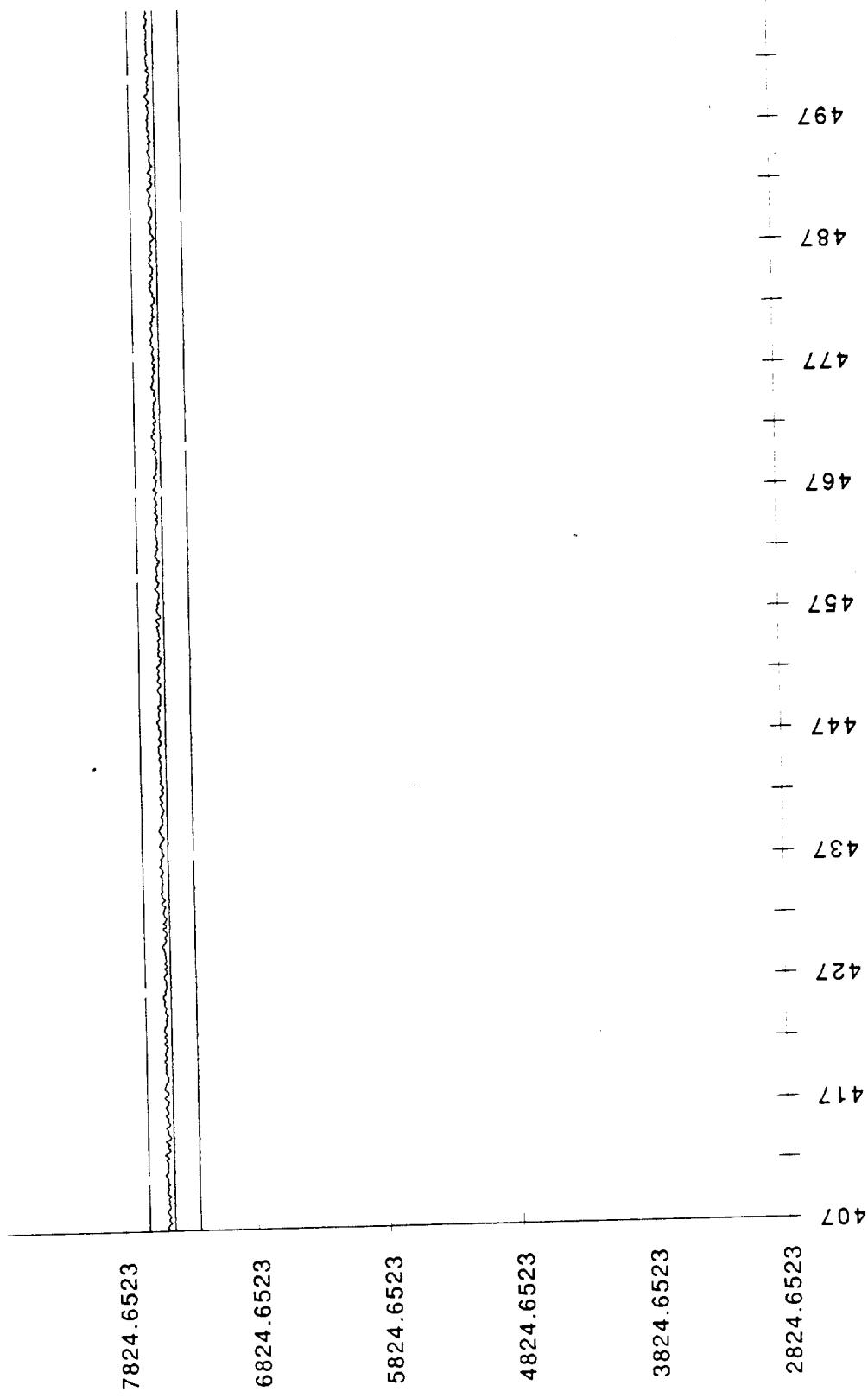
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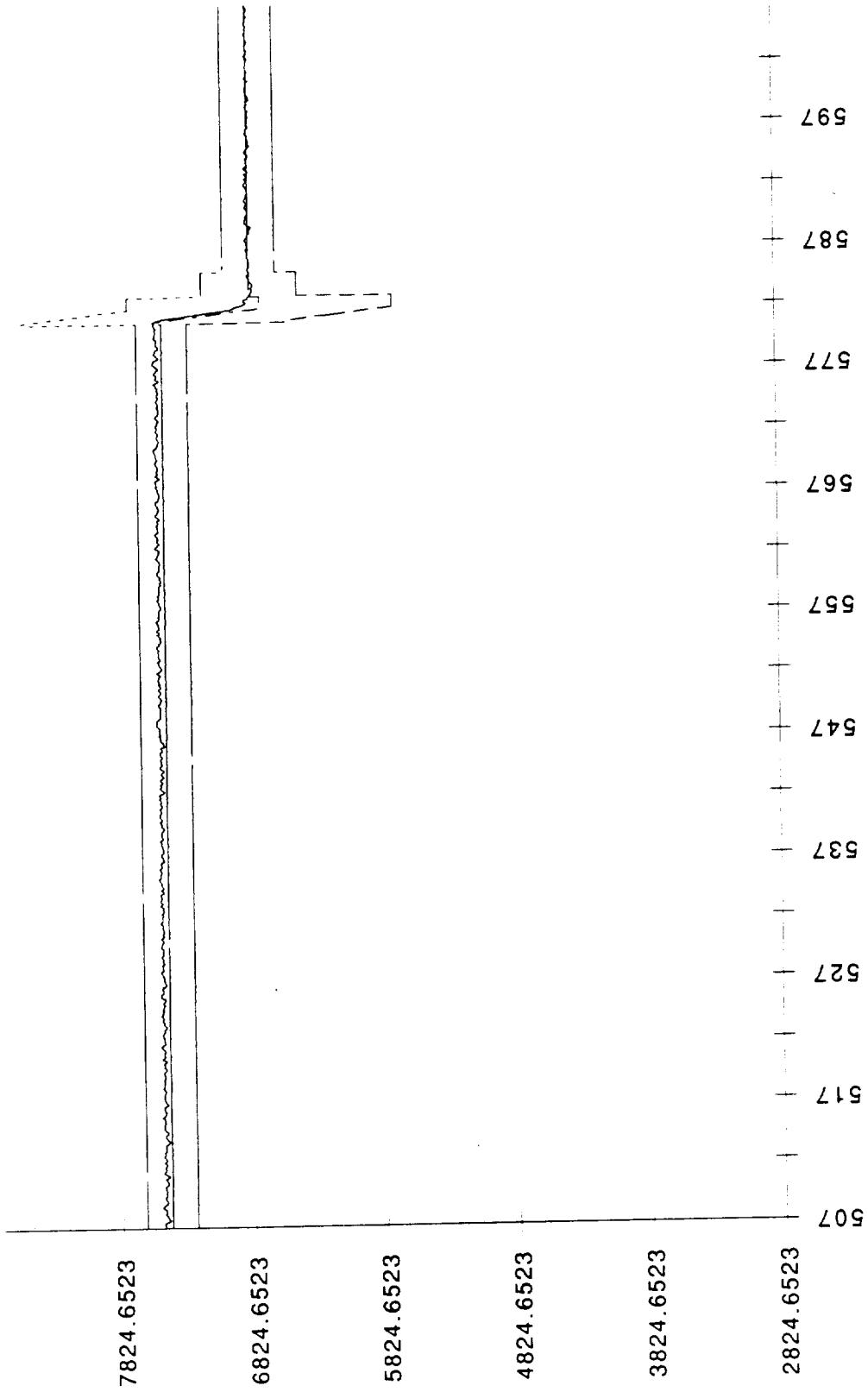
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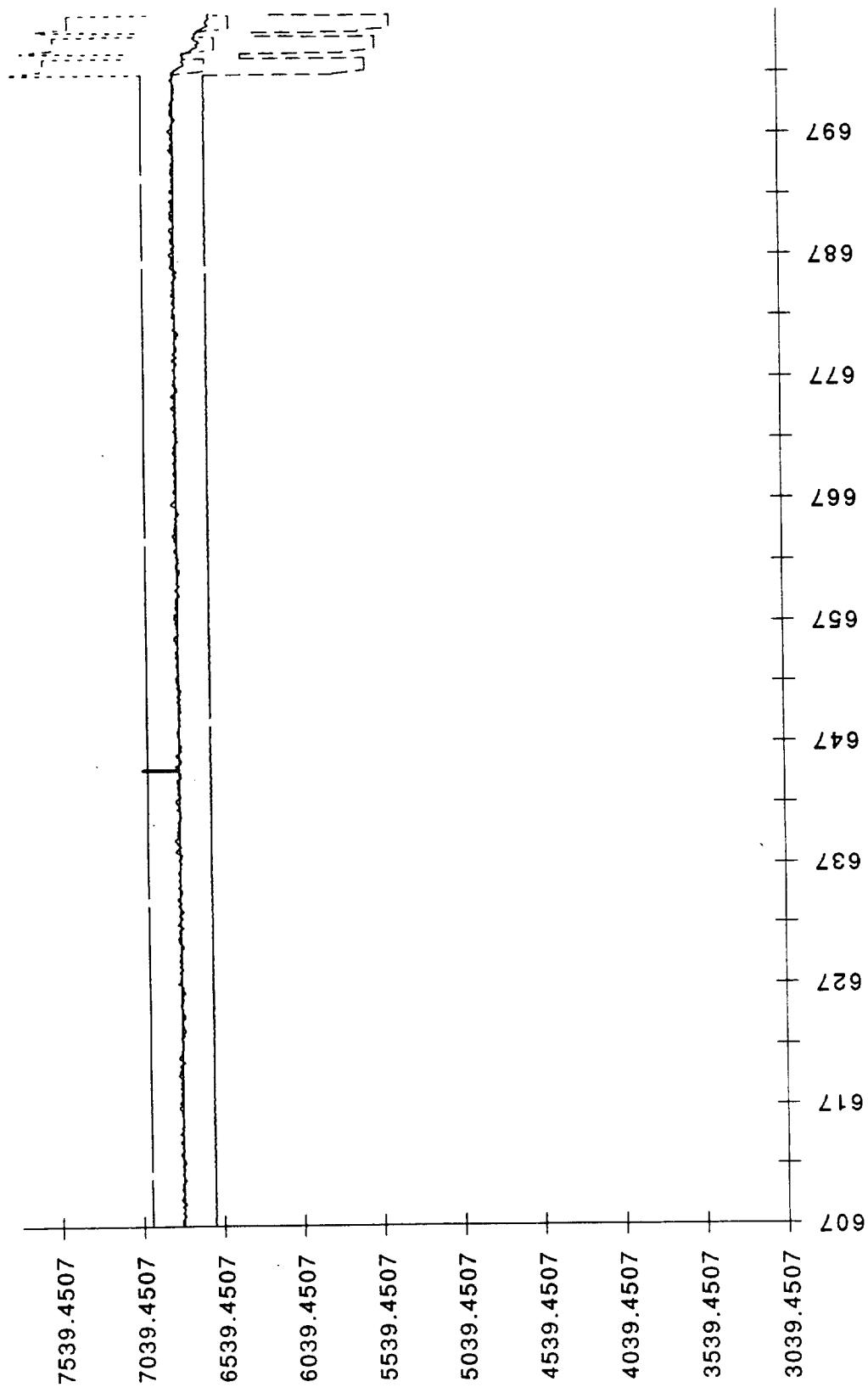


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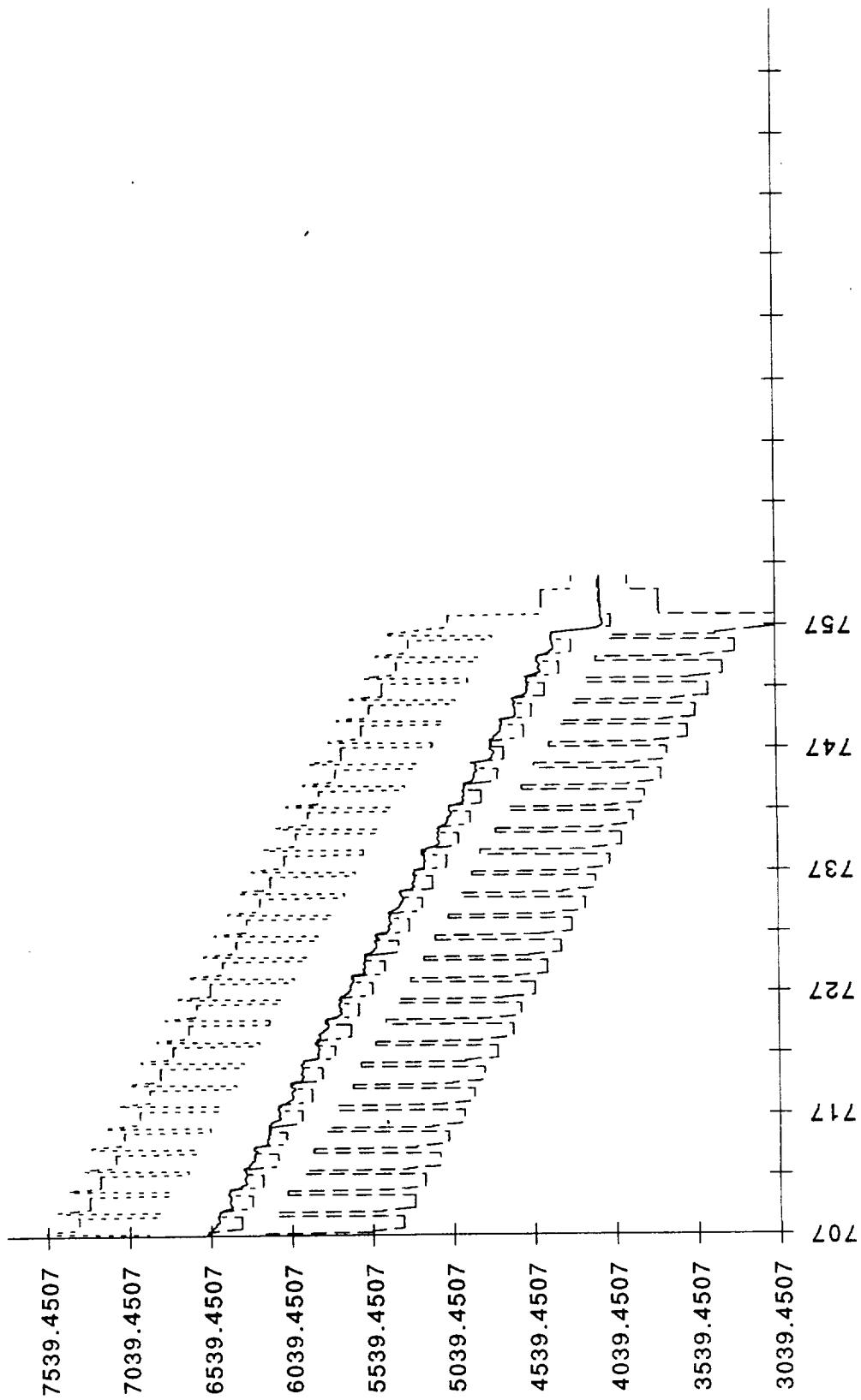
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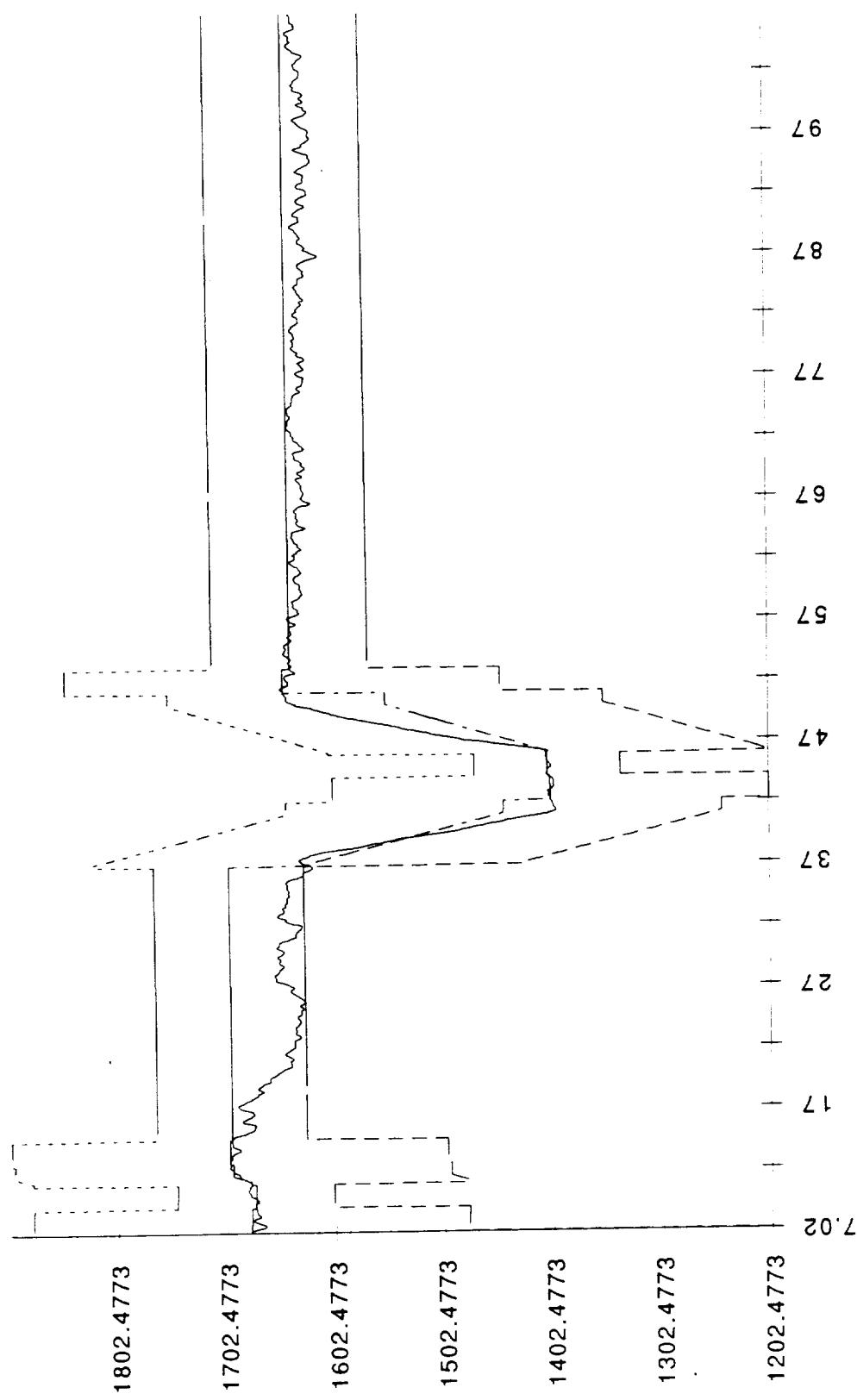
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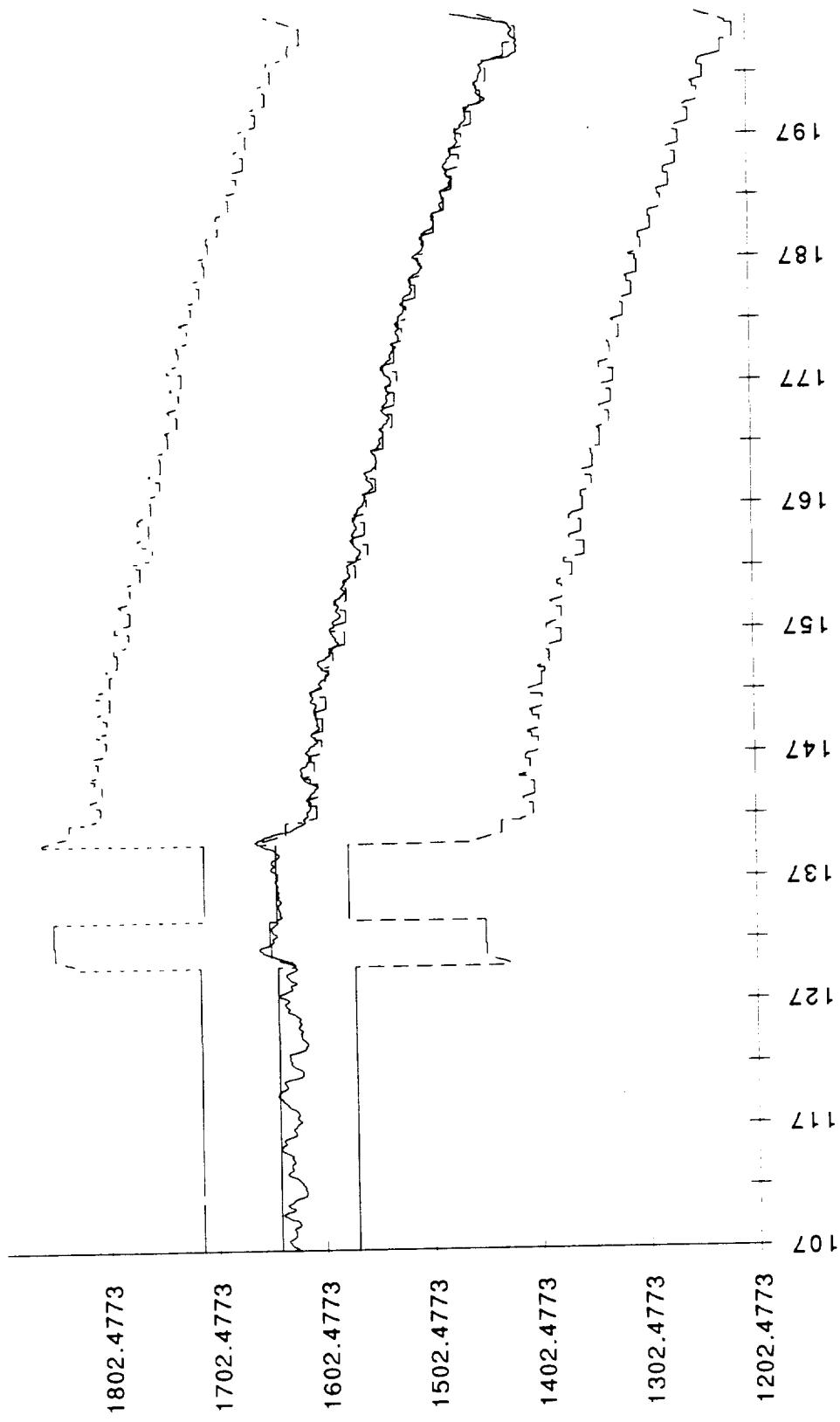
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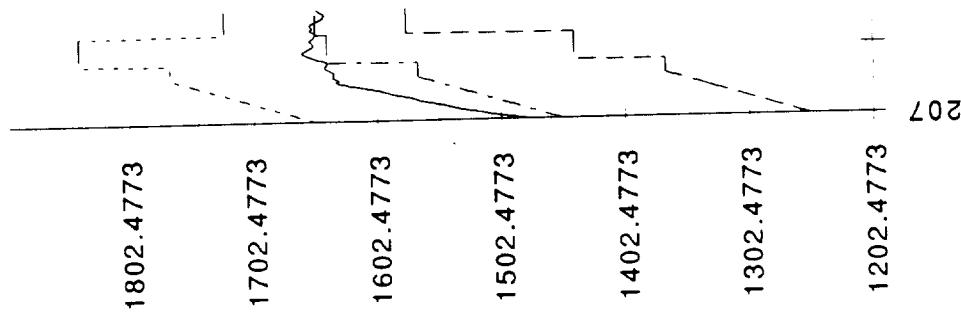
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904-246 HPFP TDT B.T



904-246 HPFP TDT B.T

904-246 HPFP TDT B.T



904-246 HPFP TDT B.T